Panamint Shoshone in the Death Valley Region, 1891.
THE TIMBA-SHA SURVEY AND BOUNDARY FENCING PROJECT

Archeological Investigations at Death Valley National Monument

By
Martyn D. Tagg

Contributions by
Lisa W. Huckell
and
Keith D. Weaver

Western Archeological and Conservation Center
Tucson, Arizona

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Part 1

General Introduction
INTRODUCTION

In March 1984, the author and J. Michael Bremer, archeologists from the Western Archeological and Conservation Center, conducted two small archeological projects in Death Valley National Monument. The first consisted of a 200-acre land survey in and around Timba-Sha Indian village, which overlooks the saltpan in central Death Valley, California. The second consisted of data collection from four sites located in the Grapevine Mountains in southwest Nevada. Although the projects are geographically and environmentally distinct, both projects fall in a portion of the Great Basin utilized by the same cultural groups, and the sites dealt with illustrate this. For that reason, and because the projects were carried out in the same field project, they have been included in the same report.

However, each of the two projects was carried out for reasons of its own, and needed separate conclusions and recommendations. This report is, therefore, arranged into five sections. The background information pertinent to both projects will be presented after the introduction. In the next two sections, the two individual project reports will appear, containing information and results that are project specific. Finally, some concluding remarks tying the two projects together are presented in the fifth and final section of the report.
Part 2

Death Valley National Monument
Background Information
Figure 1. Death Valley National Monument, including project areas (revised from Oetting 1980:viii).
The fans at the base of the Black Mountains are small isolated deposits found at the mouths of individual canyons (Barton 1983:7; National Park Service 1978:25; Craib 1978:20). Compounding this situation is the continuing tilt of the valley floor to the north and east that has caused salt pan deposits to overlap the toe of Black Mountain alluvial fans. The alluvial fans include some of the driest ground in the monument, being highly permeable with water seeping quickly into the ground. The gravel deposits on the fans are rounded and firm, contain little or no desert varnish, and lie loose and ill-seated among more deeply seated boulders (C. Hunt 1975:67-77).

Finally, the salt pan, covering more than 200 miles of the valley floor, consists of alluvial sediments of sands and gravels deposited during the past several million years, the upper 1,000 feet of which consists of evaporites, such as halite (rock salt) and gypsum, interbedded with clay (National Park Service 1976:11).

Climate and Hydrology

Death Valley is recognized as the hottest and driest area in the United States. Temperatures on the valley floor average 100°F, and have reached 134°F in the summer months (the record high temperature in the western hemisphere), with subfreezing temperatures not uncommon in the winter. The salt pan and connecting feet of alluvial fans are often 5 to 10°F cooler than the average temperature, due to a 300-foot thick layer of cooler air that rests in the valley bottom. This is caused by cold air drainage from the surrounding high mountains and the formation and evaporation of the hygroscopic and capillary water of the salt pan surface. In general, temperatures decrease 5°F for every 1,000 foot rise in elevation (National Park Service 1976:15).

The Death Valley hydrologic basin, encompassing an area of about 8,700 square miles, is a closed basin with no through-flowing streams. Five principal rock types within the valley affect the regional surface and groundwater systems, with most having low permeability and allowing water to escape through fault zones (National Park Service 1978:31). Groundwater origin includes local precipitation and underflow from drainage basins beyond the monument boundaries.
Annual precipitation in Death Valley, measured at Furnace Creek, averages only 1.66 inches per year with a high of 4.5 inches recorded in 1941 and a low of zero inches recorded in 1953 (C. Hunt 1975:18-19). The high Sierra Nevada Range, 100 km to the west, creates a rain shadow in Death Valley by intercepting most available moisture. This, and the fact that the valley is influenced from later winter to early fall by the offshore Pacific high-pressure system with its descending stable air with higher temperatures and lower relative humidities, contributes to the aridity of the area. Evaporation also outstrips rainfall, with less than 1 percent of the precipitation soaking deep enough to recharge the water table (National Park Service 1976:15-16). The annual precipitation increases by a rate of approximately two-thirds of an inch for every 1,000 foot rise in elevation to 5,000 feet. Above this it increases even more, with totals of 12 to 15 inches per year. The average precipitation for the entire monument is between 4 and 5 inches per year (National Park Service 1976:17).

Almost half of Death Valley's water comes through faults from mountains and valleys outside the hydrologic basin. A principal source of this water comes from the Spring Mountains, 50 miles to the east (C. Hunt 1975:19). In addition, over 420 surface water sources have been recorded, mostly in the Cottonwood, Panamint, and Grapevine mountains, including potholes, seeps, wells, springs, and ponds. Springs make up the majority of these, and most of the larger sources derive from water discharged along high-angle faults such as the Furnace Creek fault zone, between the Black Mountains and Funeral Mountains (National Park Service 1976:18; C. Hunt 1975:26). Water discharge at these springs is affected by the seasonal rate of evaporation (C. Hunt 1975:30; National Park Service 1976:18). Water quality also improves with elevation, with valley sources often brackish or salty and mountain sources clear and of good quality (National Park Service 1976:18).

As early as 22,000 years ago, the climate was wetter and cooler, as evidenced by paleoenvironmental studies for the Great Basin; but the general climatic trend for the last 8,000 to 10,000 years was essentially the same as that which occurs presently (Barton 1983:10).
Flora

The vegetation of Death Valley encompasses four biotic life zones: the Lower Sonoran, the Upper Sonoran, the Canadian, and the Artic-Alpine, as defined by Storer and Usinger (1968). Within these life zones, the environment can be further categorized into seven plant communities, each characterized by dominant overstory vegetation and representative of five plant communities: the salt flat community, the desert scrub community, the pinyon/juniper community, the bristlecone pine community, and the limber pine community (National Park Service 1976:22).

The salt flat community occupies the lower elevations of the monument up to 3,000 feet, and consists of three zones: the barrens ecotone, the phreatophyte ecotone, and the saltbush ecotone (Fig. 2). The barrens ecotone occurs in various places on the valley floor: on the saltpan where available groundwater contains in excess of 6 percent dissolved salt concentrations (twice the salinity of sea water); on active sand dunes and bald rock surfaces; and on gravel fans or desert paved areas where soil moisture is deficient (National Park Service 1976:22). These areas have no flowering plants; the saltpan contains no shrubs at all, and the remaining areas have less than one shrub per acre. About 30 percent of the surface of the gravel fans are bare.

The phreatophyte ecotone is composed of those plants that put roots down into the water table or its capillary fringe and are salinity-tolerant. Predominant species that are found on the perimeter of the saltpan are honey mesquite (Prosopis juliflora), which serves as a stable base for sand dunes; four-wing saltbush (Atriplex canescens), growing in sandy soils that are not so saline; and two exotic species of tamarisk (Tamarix ramosissima and T. aphylla). Other plants common to this ecotone are arrowweed (Pluchea sericea), alkali-sacaton grass (Sporobulus airoides), inkweed (Suaeda sp.), saltgrass (Distichlis stricta), rush (Juncus cooperi), and pickleweed (Allenrolfea occidentalis). Around canyon springs or springs on alluvial fans are desert baccharis (Baccharis sergiloides), willow (Salix sp.), screwbean mesquite (Prosopis pubescens), and common reed grass (Phragmites communis) (National Park Service 1976:23-24). The Timba-Sha survey area sits on the upper fringe of this ecotone and the lower edge of the saltbush ecotone.
Figure 2. The salt flat community around Timba-Sha Village; the barrens ecotone is represented by the saltpan, the phreatophyte ecotone by the mesquite and tamarisk around the village proper, and the saltbush ecotone is on the gravel fan in the foreground with desert holly.

Figure 3. The sagebrush scrub community near Willow Spring with dominant sagebrush. Pinyon pine and willow trees on the back ridge are at the spring.
The saltbush ecotone begins with the appearance of xerophytic plants which depend on ephemeral water in soil above the water table and are capable of surviving protracted dry periods (C. Hunt 1975:190). This ecotone ranges from the boundary of the saltpan up to elevations of about 3,000 feet. The predominant plant is desert holly (Atriplex hymenelytra), which forms nearly pure stands at the foot of fans along the east side of the saltpan. It is the most drought-resistant xeric plant in Death Valley, thriving on salt, and along with creosote and cattle spinach covers most of the lower half or two-thirds of the gravel fans to about 500 feet above sea level (C. Hunt 1975:194). The only other perennial plants known to grow in these stands are honeysweet (Tidestromia oblongifolia), spurge (Euphorbia sp.), and cattle spinach (Atriplex polycarpa) (National Park Service 1976:24; C. Hunt 1975:191).

The desertscrub community, which dominates 75 percent of Death Valley National Monument, is represented by the dominant creosotebush (Larrea divaricata), the next most xeric shrub after desert holly (C. Hunt 1975:194). Three plant communities are represented in this association, the creosotebush scrub, shadscale scrub, and sagebrush scrub. The creosotebush scrub consists mainly of shrubs and dwarf shrubs, and is dominated by the creosotebush, found as low as 200 feet below sea level and up to 5,000 feet above sea level. This plant community integrates with the lower saltbush ecotone of the salt flat association and with the shadscale scrub communities found higher. Also found in this community are burrobush (Ambrosia dumosa), brittle-bush (Encelia farinosa), desert holly, desert trumpet (Eriogonum inflatum), stingbush (Euclide urens), and sticky-ring (Boerhaavia annulata). Grasses are also present, especially foxtail chess (Bromus rubens), but it comprises only a small percentage of the ground cover (National Park Service 1976:24-25).

The shadscale community is found from 3,000 feet to 5,000 feet and occurs primarily on heavy soils that contain an underlying hardpan in their profiles, blending in with both the lower creosotebush scrub community and the higher sagebrush scrub community. The dominant species include shadscale (Atriplex confertifolia), hop-sage (Grayia spinosa), sagebrush (Artemesia spinescens), snakeweeds (Gutierrezia
sarothrae), and winter-fat (Eurotia sanata) (National Park Service 1976:25).

The sagebrush scrub community, sometimes known as the blackbrush community due to the greater abundance of blackbrush (Coleogyne ramosissima) over big sagebrush (Artemesia tridentata), is common between 4,000 to 7,000 feet (Fig. 3). Mixed with the blackbrush or sagebrush are other scrubs such as rabbitbrush (Chrysothamum nauseosus and C. paniculatus), horsebrush (Tetradymia spinosa), joint fir or Mormon tea (Ephedra sp.), and desert and thickleaf sage (Salvia dovii and S. pachyphylla). Vegetative cover is greatest in this community because environmental conditions are more favorable and soils are deeper than on the valley floor. Grasses are prevalent, including desert needlegrass (Stipa speciosa), galleta grass (Hilaria jamesii), and foxtail chess. In the Cottonwood Mountains and northwestern Grapevine Mountains, a disjunct population of Joshua trees (Yucca brevifolia) replaces many of the characteristic species of this community (National Park Service 1976:25-26). All four sites on the Boundary Fencing Project are located on the upper fringe of this community, and on the lower fringe of the pinyon/juniper woodland, including species from both communities (Fig. 4).

The pinyon/juniper woodland is an open, well-spaced community, that ranges from about 7,000 to 9,500 feet (Fig. 5). Soil within this community tends to be bare and covered with a desert pavement-like layer of deflation. The dominant species is the single-leaf pinyon pine (Pinus monophylla) and scattered individuals of juniper (Juniperus osteosperma), while along drainages and below ridges these give way to woodlands of curly-leaf mountain mahogany (Cercocarpus ledifolius) and cliffrose (Cowania stansburiana). Mountain meadows around 9,000 feet have carpets of matforbs, sagebrush, desert sage, tansybrush (Chamaebatiaria millefolium), and ephedra (Ephedra viridis) (National Park Service 1976:26). The forest associations include the subalpine and bristlecone pine forest communities, both of which occur in narrow, open woodland belts in the extreme upper elevations of the monument. Dominant in the subalpine community is the limber pine (Pinus flexilis), while the bristlecone pine (Pinus aristata) and limber pine are dominant in the
Figure 4. The sagebrush scrub - pinyon/juniper woodland transition zone in the Grapevine Mountains, looking down from DEVA 83A-7 toward Sarcobatus Flats.

Figure 5. The pinyon/juniper woodland with the dominant pinyon pine, juniper trees and sage on the ridge below DEVA 83A-7, the highest elevation site on the project.
bristlecone pine community. There is much integration between the two communities, with limber pine and big sagebrush found in both. Other plants in the subalpine community include juniper, mountain maple (Acer glabrum), tansybush (Eriogonum spp.), and gooseberry (Ribes spp.). The higher bristlecone pine community has curly-leaf mountain mahogany, Brewer's cliffbrake (Pellaea breweri), and sagebrush (Artemisia arbuscula, Haplopappus gilmanii, and Cryptantira spp.). The forest association begins at about 9,000 feet and is present in both the Panamint and Grapevine Mountains, although only the Panamints are high enough to support bristlecone pine. Soils tend to be extremely thin and rocky, and in places discontinuous due to bald rock outcrops (National Park Service 1976:26-27).

Fauna

Various species of birds, mammals, reptiles, amphibians, and fishes live in Death Valley National Monument, having adapted to the arid environment by regulating their bodies to increase perspiration or evaporation efficiencies, to conserve water by excreting highly concentrated urine or dry feces, or by living nocturnally or burrowing underground to avoid the heat. Some animals, such as birds, migrate to more favorable conditions. As of 1976, the vertebrate fauna within Death Valley National Monument included 51 species of native mammals and 2 exotic species, 307 species of birds, 36 species of reptiles, 3 species of amphibians, and 6 species of fishes (National Park Service 1976:33).

Of the 53 mammal species, most are small animals. The exceptions are the desert bighorn (Ovis canadensis), bobcat (Lynx rufus), mountain lion (Felis concolor), and mule deer (Odocoileus hemionus), which are all found at higher elevations, as well as the feral burro and horses established in the monument in the 1870s (National Park Service 1976:33-34). Various species of bats, ringtail cat, skunks, badgers, foxes, coyotes, squirrels, chipmunks, gophers, mice, kangaroo rats, woodrats, voles, porcupines, jackrabbits, and cottontails have been seen in the monument. Most mammals prefer high elevations or more vegetated areas; a few live in Death Valley, including the kitfox, coyote, ground
squirrel, kangaroo rat, various mice and woodrats, blacktail jackrabbit, and desert cottontail (National Park Service:C-1 to C-2).

Of the 307 bird species seen within the monument, only about 100 are resident or seasonal; the majority are migratory species. Included in this group are various species of loons, grebes, pelicans, herons, egrets, bitterns, ibis, flamingos, swan, geese, ducks, teals, widgeons, vultures, hawks, eagles, esprey, falcons, quail, rails, sandpipers, gulls, pigeons, doves, owls, poor-wills, nighthawks, swifts, hummingbirds, kingfishers, flickers, woodpeckers, sapsuckers, kingbirds, flycatchers, larks, swallows, jays, magpies, ravens, crows, wrens, thrashers, robins, thrush, bluebirds, gnatcatchers, vireos, warblers, sparrows, blackbirds, orioles, tanagers, grosbeaks, buntings, finches, towhees, and juncos. Some species are uncommon or rare, while others, such as Coopers and red-tailed hawks, chukar, roadrunner, great horned owl, Say's phoebe, common raven, pinyon jay, mountain chickadee, rock wren, mockingbird, starling, house sparrow, red-winged and Brewer's blackbird, house finch, black-throated and sage sparrow, and the Oregon junco, are commonly seen year-round (National Park Service 1976:C-5 to C-7). The alteration of natural water sources, especially at Furnace Creek Ranch, has affected the natural habitat and its associated species. Two hundred and thirty-two bird species have been sighted in this area, including 16 that nest there (National Park Service 1976:39).

All but two of the 36 species of reptiles and 3 species of amphibians are common, with stable populations. These include various species of lizards, the desert tortoise, geckos, desert iguana, chuckwallas, skunks, snakes (including 2 rattlesnakes), one species of toad, treefrog, and bullfrog (National Park Service 1976:C-3 to C-4). Six species of fish, including 5 pupfish and a mosquito fish, and 15 species of molluscs are also found in Death Valley (National Park Service 1976:C-4). There have been no extensive studies of invertebrates in the monument.

Cultural Use of the Environment

Much of what is known of the cultural use of Death Valley National Monument has come from ethnographic studies of the Shoshone (Steward 1938, 1941). The activities of the local inhabitants was governed by
the availability of culturally valuable natural resources. Since gathering and hunting was the basis of subsistence, the location and nature of activities depended on the type and distribution of plant and animal species. Because of the extreme aridity of the area, the location of the springs and streams that made habitation possible was of extreme importance (Steward 1938:10). These sources constituted ecological niches that offered the advantages of water, game, and edible plants; therefore, springs in and around the Death Valley floor were always heavily utilized.

The Panamint Shoshone have migrated cyclically with the seasons from high to low elevations for longer than a century. Their lives were regulated by a constant search for food, following ripening vegetation over much the same seasonal route year after year. During the winter, spring, and early summer they camped in the low warm valleys or lower canyons in the shelter of mesquite dunes, relying on cached foods and the edible greens which grew first in the early spring and other herbaceous plants which ripened in early summer. In later summer and fall, they moved to the high country living on maturing roots and berries until the pinyon nuts began to ripen in early fall. They stored the excess nuts in the mountains and wintered nearby, living in open sites or rockshelters. The completion of the annual cycle was the return to the winter village (Steward 1938:19-20; Wallace 1957:2; Craib 1978:36).

The Indians usually established their winter camps in the sand dunes around the saltpan; little more than a windbreak or wickiup was needed in the mild climate (C. Hunt 1975:169-171). The mesquite-covered dunes offered many advantages. The hollows between the dunes offered protected living spots, and mesquite branches were used for house frames, fuel, and wooden implements. Water could also be reached by digging down only a little way (Wallace 1977:13). The dunes also abounded with small game, such as rodents, birds, and lizards, which were staples of the Indian diet and supplemented the stored pinyon nuts from the previous years' harvests (Norwood et al. 1980:90-91). Early observers mention that the Indians ate desert woodrat, pack rat, Kangaroo rat, white-footed mice, antelope, round-tailed ground squirrel, desert terrapin, cottontail, duck, and lizards (A. Hunt 1960:11-12).
Grinnell (1937:134) reported that women and children around Furnace Creek were trapping rodents and lizards in mesquite thickets using deadfall traps or nooses. These consisted of a figure-4 stick arrangement set on large rock slabs surrounded by a low rock wall, using mesquite pods for bait. Remains are found on the gravel fans, usually at the base of hills and beside game trails (A. Hunt 1960:12, 189). Chuckwallas were pulled from rock crevices by a stick and noose, and were sometimes traded to neighboring tribes (Steward 1941:331). Wildcats, skunks, crows, ravens, owls, hawks, doves, mockingbirds, mudhens, quail, and caterpillars were also sought for food (Steward 1941:279), as well as desert tortoise (A. Hunt 1960:12-13). Bighorn sheep were hunted on the gravel fans, using hunting blinds overlooking the game trails and springs. Spears (1892:73) said the sheep were chased towards the blinds, where marksmen lay in wait to kill them. Poison arrows were often used (Wallace 1977:41). Antelope were occasionally found in small numbers, as in the Sarcobatus Flats in the northeastern corner of the monument (Steward 1938:90). Small fish were also regularly sought, and birds were taken when possible (A. Hunt 1960:12-13). Insects such as caterpillars and fly larvae were eaten (Wallace 1977:40). Animal skins, especially those of mountain sheep, were used for making blankets and clothing (Steward 1941:300).

The gathering of indigenous plant foods was depended on more than hunting, since animals could not be obtained in abundance (Steward 1938:232). Mesquite beans and pods, which ripen in May or early June, were hand-picked by women and eaten raw, made into flour, or stored for later use in the lean months of early spring (A. Hunt 1960:8). Reed grass furnished a sugary substance; it was cut and dried in early summer, ground into flour, formed into a gum-like mass and cooked (Coville 1892:355). The seeds of the sagebrush, though bitter, were also eaten (Wallace 1977:42). Creosotebush was used for medicine and as a source of fuel by the Cahuilla of northern California. The seeds from saltbush were harvested from July to September and were ground into flour to be eaten as mush (Bean and Saubel 1972:27-154). Desert plume was boiled, and seeds of rice grass, blue grass, mormon tea, evening primrose, and cottontop cactus were ground into meal for soup or bread. The seeds and fruits of other cacti were also eaten, usually after they were dried and
either boiled or baked, and the seeds of common sandgrass were collected and ground into flour (Coville 1892:354). For example, the joints of beavertail cactus were dried and boiled.

The annual summer encampments of the Panamint Shoshone were in the mountains surrounding Death Valley, located in stands of pinyon and juniper trees, often on long low ridges running onto the valley floors. Summer structures were very temporary, just roofless brush enclosures or windbreaks (Dutcher 1893:377). The numerous limestone caves were also commonly used (A. Hunt 1960:19). The presence of water was once again a factor, and campgrounds usually were within about 450 m of a water source (Thomas and Bettinger 1976:356). Pinyon nuts were the primary food stuff collected during this period; Steward (1938:27) claimed it was the single most important aboriginal food source. Pinyon nuts were collected in early fall, and carried down to the winter camps in the valley to be stored (A. Hunt 1960:9). Harvesting lasted two to three weeks, rarely longer (Steward 1938:27). Forked sticks were used to collect the cones, which were dried, winnowed in basket trays, and either eaten or ground in wood mortars and made into soup (Dutcher 1893:377; Coville 1892:353). Several other plant foods were available at higher elevations, including gourds, members of the mustard family, chia, and blazing star. The buds of joshua trees (the "tree yucca"), were roasted and eaten. Coville (1892:355) said that the Indians would eat almost any green plant. The desert bighorn and mule deer were also more available at higher elevations, and were hunted when possible.

Steward (1938:256) said that although there was no land ownership of food territories, families often had cultivated land and plots of mesquite, screwbeans, and pine nuts. Horticulture was apparently introduced by Euro-Americans, and the inhabitants of Death Valley grew corn, pumpkins, squash, muskmelons, sunflowers, beans, and watermelons obtained directly from the white man. The Shoshone were also known to plant wild seeds, such as alkali-sacaton grass (Steward 1941:232; A. Hunt 1960:15).

Many nonfood resources were also available in the monument. Juniper wood was used for making bows; reeds, shoots of willow, and arrowweed were available for making arrows; various hardwoods such as juniper, possibly mesquite, and species of Atriplex were occasionally
used to make small projectile points; gum from the creosotebush was used to attach points to arrowshafts; and mesquite logs were made into mortars. Devil's claw, yucca, willow, sumac, and inkweed were used for dyes. Inkweed leaves were also used for soap.

All lithic materials used for making both flaked and ground stone tools were obtained locally, either from outcrops in the mountains or from boulders and cobbles in the gravel fans. Four different kinds of lithic material were utilized: glassy volcanic rocks from Tertiary formations such as obsidian, dense basalt, and felsite; silicified volcanic rocks such as milky white and clear quartz or chalcedony; quartzites from Paleozoic formations; and cherts from Paleozoic limestone or dolomite formations. Talc and green argillite were used to make pendants. Minerals and clays for making pottery were available, but much pottery was brought in from the outside rather than made locally (A. Hunt 1960:16-19).

The Indian bands living in the monument were self-sufficient units, not relying on outside trade for survival. Though not an area lush in either faunal or floral resources, Death Valley and the surrounding mountains did offer materials sufficient to provide a scant living for the small number of inhabitants in the region.
Chapter 2
CULTURAL BACKGROUND

Prehistory

As is common with many geographical regions in California, very little research on the Death Valley area other than surveys has been done, and the prehistoric cultural chronologies are the subject of controversy and confusion. This follows, in part, from the fact that the Great Basin is a large environmentally diverse area. Furthermore, some investigators have defined distinct cultural sequences for individual valleys; this has been the case for Death Valley (Barton 1983:14; Craib 1978:27). These cultural chronologies have been largely based on diagnostic artifacts such as projectile points, and the presence or absence of other temporally sensitive artifacts such as ceramic types, basketry, and shell beads.

In more recent years, tighter temporal control has been established through radiocarbon and other dating techniques, and investigators are in closer agreement on the cultural and chronological phases of this region (Craib 1978:29-30; Warren et al. 1980:16-17). While it is assumed that regional variation did exist in an area as large as the Great Basin, there is not sufficient data to distinguish smaller geographic subunits, and so the cultural history is investigated on a larger regional scale, based on cultural periods for the southern California deserts that are now recognized by most investigators. Table 1 illustrates four chronological schemes used recently in the southwestern Great Basin that are all in relatively close agreement, as well as the one used in this report.

The prehistory of Death Valley is relatively unknown, but it is reasonable to assume that the areas around major springs were exploited by all inhabitants or transients in the area because of their microenvironmental conditions. This type of specialized exploitation of the microenvironment and the location of base camps or seasonal villages at natural water sources is an adaptive strategy common to people occupying arid and harsh environments, such as Death Valley, throughout the world (Douglas 1979:3, 50; Tagg 1983:25). Therefore, it is probable that the areas investigated in this report were utilized by most, if not
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all, of the cultural groups throughout time. Information on the prehistory of the area was previously collated and summarized by Tagg (1983) and Barton (1983) from the works of various authors, and is taken mainly from these sources.

Pre-Paleo-Indian (pre-10,000 B.C.). Commonly referred to as the Pleistocene period, though this is a temporal and not a cultural designation, this period includes many claimed finds of early man in southern California such as the Calico and Manix Hill sites. The antiquity of these sites is hard to substantiate, either because they occur on desert pavement and could have been deposited at any time after the formation of the pavement, or because they are based on "artifacts" that have not been proven to be man-made (Coombs 1979a:16; Warren et al. 1980:19). The term "Malpais" has been used for the pre-projectile point industries found throughout the California desert that consist of large "handaxe-like" bifaces, choppers, cores, and flakes created by crude hard hammer techniques (Hayden 1976:280-288; Warren et al. 1980:19). Milling tools seem to be absent. The lack of points and simple technology suggest an early date, but they are limited to surface distributions, so their age can not be determined. Glennan (1976:43-61) points out the fact that these sites occur in the vicinity of geological deposits containing abundant material suitable for flaked stone production, such as Manix Basin and Calico Hills, and may derive from quarry and workshop activities; this would explain the lack of points (Warren et al. 1980:19). To date, no definite sites from this time period have been found in Death Valley, although claims of early crude core and flake tools found on desert pavement have been made (Clements and Clements 1953).

Paleo-Indian (10,000-5000 B.C.). The western Paleo-Indian complexes represent the first well-documented occupation of the Great Basin, belonging to an early hunting tradition that exploited now extinct fauna over a wide area of southern California. The San Dieguito and Haskomat complexes (as defined by Rogers 1939; Warren 1967:168-185; Warren and Ranere 1968:6-18) best represent this time period. It is characterized by surface sites usually found on desert pavement and
associated with river and lakeshore environments, which is where archeologists have tended to search for them (Warren et al. 1980:30-34; Craib 1978:31). The flaked stone assemblages include a variety of spear and dart points (characterized by Lake Mojave, Clovis, Silver Lake, Cougar Mountain, Haskett, and Lind Coulee points), leaf-shaped knives, graving tools, a variety of domed scrapers, spokeshaves, and crescents, usually crudely made with irregular edges (Wallace 1962a:174; Crabtree and Warren 1979:16-17). Structural features consist primarily of rock-ringed, clear depressions (Craib 1978:32). Fluted points similar to Clovis and Folsom points that are associated with this period have also been found throughout the California desert (Simpson 1981:23; see also Harrington 1948 and Glennan 1971:27-32).

In Death Valley, only three or four sites have been found that fall into this time period, located on desert-paved gravel benches near springs. These sites, designated as Death Valley I, have all of the artifacts common to this time period with the exception of crescents, as well as a number of possible hearths, and have been dated on the basis of the point styles (A. Hunt 1960:20-60). None of these sites are associated with lakeshore features; however, it has been suggested that they are contemporaneous with the last stand of Lake Manly (Craib 1978:32).

Desert Archaic (5000-500 B.C.). It has been suggested that during the Altithermal (roughly 6000-4000 B.C.), a time when environmental conditions became as they are today, there was an occupational hiatus and a change in the subsistence pattern from hunting to both hunting and gathering plants; this change is suggested by the higher ratio of ground to chipped stone in the Pinto period (5000-2000 B.C.) (Wallace 1978: 25-36; Coombs 1979a:18). Complexes representative of this period are the Pinto Basin Complex (Campbell and Campbell 1935) and the Stahl site (Harrington 1957), where are found the Pinto, Humboldt, Silver Lake, and Mojave points, leaf-shaped points and knives, a number of scraper types, planes, drills, gravers, and milling stones (Harrington 1957).

There are many problems in connection with this time period, including even considerable disagreement over what constitutes a Pinto point, the sole diagnostic artifact for this period. Other difficulties
are the paucity of excavation data; a weak chronology based on surface collections; the question of the relationship of artifacts to geologic features, and artifact weathering (Simpson 1981:24; Warren et al. 1980: 35-44). On the basis of current data, this period extends from about 3000 to 700 B.C. (Craib 1980:33).

Only six Pinto period sites have been found in Death Valley, generally located near springs overlooking the saltpan; there are four open sites, a rockshelter, and a rock mound. No milling stones have been found at these Early Death Valley II sites (A. Hunt 1960:62-73).

Basically a continuation of the Pinto period, the Elko/Gypsum period (2000 B.C.-A.D. 500) is characterized by Elko, Humboldt, and Gypsum Cave points, which have been found in moderate numbers associated with radiocarbon dated materials (Warren et al. 1980: 20). It fits within the general Amargosa complex first defined by Rogers (1939) and differs from the Pinto period in an increase in grinding implements, suggesting a heavier emphasis on plant processing. The artifact assemblage also includes a variety of knives, scrapers, drills, and other small stone tools (Crabtree and Warren 1979:21). Stone and shell beads, incised and painted pebbles, slate tablets, mortars and pestles, and split twig figurines have also been noted at sites from this period (Crabtree and Warren 1979:21). In the eastern Mojave, influence from the Anasazi is seen in such traits as figurines, Basketmaker III pithouses, and possibly the introduction of agriculture. The inhabitants of the western Mojave seem to have been less influenced, retaining a hunting-and-gathering lifestyle (Warren et al. 1980:45-47). Only traces of this period, Late Death Valley II, have been found in the area around the Death Valley saltpan in sites with mixed cultural deposits, which were identified by diagnostic artifacts. The Amargosa Valley to the east, though, has numerous sites (A. Hunt 1960:65-110).

Ceramic Period (ca. A.D. 500-ethnographic present). In the Rose Spring/Eastgate period (A.D. 500-1200), the bow and arrow were introduced into the basin area, as reflected by a decrease in the size and weight of points. These points are represented by the Rose Spring and Eastgate series. Anasazi influence increased with the spread of artifacts (especially ceramics), and possibly a few Anasazi settlements
through the eastern Mojave Desert and as far north as Saratoga Springs in southern Death Valley (Warren et al. 1980:49-52). Characteristic of these assemblages are the above-mentioned points, Virgin Branch Gray Ware ceramics, green shist and slate pendants, bone beads and tools, olivella and limpet beads (the latter two imported from the California coast), unbaked clay figurines and miniature carrying baskets, conical pottery pipes, and occasionally mauls, picks, and turquoise chips in quarry areas. There is a noticeable increase in grinding stones with unshaped basin metates and one-hand manos. These artifacts suggest widespread foraging parties, trading excursions to the Pacific coast, increased dependence on plant foods, and mining parties (Craib 1978:34; Crabtree and Warren 1979:22; A. Hunt 1960:111).

This period is represented by the Death Valley III occupation (A. Hunt 1960:111-163). A number of sites were found in various ecological zones, ranging from those near water in the lower elevation deserts to rockshelters and open sites in the mountains, suggesting a full range of resource exploitation (Craib 1978:34). These sites include rock burial cairns over flexed burials with grave goods, rock alignments consisting of large circular and rectangular designs, petroglyphs, mesquite storage pits, probable habitation structures marked by rock circles with cleared interiors, and cliffside shelters closed by stone walls and having hearths (A. Hunt 1960:112). Many of these features may be related to Death Valley IV habitations; they are difficult to date with certainty.

During the Shoshonean period (A.D. 1200-European contact), the southwestern Great Basin was occupied by people recognized as ancestors of the Numic speaking Paiute and Shoshone living in the area at the time of European contact, and Anasazi influence came to an end. Death Valley was mainly occupied by Panamint Shoshone at the time of the first European contact (Grosscup 1977:114). This period is marked by the appearance of local, poorly made and poorly defined plainware ceramics such as Shoshone (Owens Valley) or Paiute utility brownwares, and small, triangular arrow points consisting of the Desert Side-notched and Cottonwood Triangular series. Other artifacts found in these assemblages are several varieties of well-made knives, drills, gravers, small flake knives and scrapers, manos, metates, pestles, bedrock and/or portable mortars, hammerstones, stone and clay balls, arrowshaft

Sites of this time period, called Death Valley IV, are the most numerous in Death Valley and are found in most areas within the monument. Variations in the size, composition, and location of these sites is linked with variations in subsistence activities and related seasonal movement. There is a generalized pattern of site distribution which consists of large base camps located in valleys or along valley margins, largely within stands of mesquite or pinyon/juniper areas, and small hunting/gathering sites located near specific resources, both in the valley and in the mountains (Warren et al. 1980:46-160; Craib 1980: 35; Wallace 1977:129-134). Both open air and rockshelter sites are found, and include rock rings, burials under rock cairns, dead-fall traps enclosed in rock walls, wickiups, hunting blinds, and windbreaks (A. Hunt 1960:163-193).

**Ethnographic Period** (Euro-American contact-present). Ethnographic data for Death Valley National Monument is scant, with the earliest observations made in the 1800s by Coville (1892), a non-anthropologist (Craib 1978:35). From this first contact, the area was occupied by three distinct Indian groups, the Panamint Shoshone, Kawaiisu, and Southern Paiute. Death Valley National Monument was occupied mainly by the Panamint Shoshone. There is some question about the presence of the Kawaiisu, who were concentrated farther to the west, and the Southern Paiute may have only utilized the edges of Death Valley (Wallace 1977: 32). The Panamint Shoshone, also referred to as the Koso (Coso) and Shoshone of eastern California, lived in the portion of the Great Basin that extends from the Sierra Nevadas on the west (bordering the Owens Valley Paiute), to the Amargosa Desert of eastern Nevada on the east (bordering the Nevada Shoshone), and from Owens Valley and Fish Lake Valley in the north, to an ill-defined boundary in the south along the Black Mountains shared with the Southern Paiute groups (Fig. 6) (Grosscup 1977:109-117). It is known only that they lived in four successive mountain ranges and their intervening valleys: the Coso, Argus, Panamint, and Funeral mountains and the Coso, Panamint, and Death
valleys. The Shoshonean stock, defined by Kroeber (1925), is the largest Indian group in California, in population as well as in territory. They occupy more than half of California, very thinly populated, and more than half of their territory is in the Great Basin. They belong to the Uto-Aztekan language family (Kroeber 1925:574-578).

Sociopolitical organization among the Panamint Shoshone was apparently limited to winter villages and groups of neighboring villages that associated with each other, since intervillage alliances were too temporary and shifting to permit politically stable bands (Grosscup 1977:116; Steward 1938:75). Villages, all located near particular springs in specific resource areas, rarely contained more than a dozen people living in two or three structures, occasionally with a sweathouse. These small family groups were independent and nearly self-sufficient economic, social, and political units. Stable kinship relations common to other Indian groups were precluded by frequent changes in residence, although groups would occasionally unite in the fall, under an acknowledged headman, for communal rabbit drives and a fall festival (Craib 1978:37; Steward 1938:230-256).

Grosscup (1977:117) illustrates nine main villages in the Death Valley region, with three to the north at Mesquite Springs and Grapevine Canyon, one in the north/central valley at Surveyors Well, one at Furnace Creek, two along the foot of the Panamint Range in southern Death Valley, one at Cottonwood Canyon Springs in the southern Cottonwood Mountains, and one on the east slope of the Panamint Range at Hungry Bill's Ranch (Fig. 6). In 1900, a census estimate by Stewart gave only 42 Indians in three villages, and rarely did the population exceed 100 people for the entire monument (Craib 1978:36).

Habitations varied seasonally, with dwellings usually consisting of cone-shaped or elliptical houses and lean-tos with circular ground plans. Mesquite was used for posts, and arrowweed, tule, or other brush for covering. Caves and rock overhangs provided temporary shelters. Sweathouses were common, even in temporary villages.

History of the Area

Very little is known of the early history of Death Valley prior to the last 150 years. The Spanish first explored the California deserts
in A.D. 1540, but whether this included Death Valley is unknown (Barton 1983:23). The California gold rush appears to have been responsible for bringing the first Euro-Americans into the valley, although it seems probable that groups using the Old Spanish Trail investigated the area earlier. Three gold seeking groups—the Mississippi boys, the Jayhawkers, and the Bennett-Arcane party—all entered Death Valley in 1849, looking for a southern shortcut to the gold fields of north/central California (Craib 1978:37; Levy 1969:37). For the next 20 years, various prospectors worked the area, establishing claims and searching for "lost" mines containing unimaginable wealth of gold and silver (Levy 1969:49-52). But mining was not very lucrative, so interest waned (Craib 1978:38). Mining booms began in 1873 in Panamint City and at Chloride City, but both were short-lived. Another mining boom, caused by the Bullfrog strike in 1904, also created a stir in the area and resulted in the building of many boomtowns. But, as with the earlier strike, this one faded out by 1912 (Barton 1983:24-25; National Park Service n.d.:12).

Many surveys and explorations came in the following years that added to the information on Death Valley. Henry Washington is first credited with surveying the monument in 1857, working for the General Land Office, and the earliest map giving recognition to the name "Death Valley" came from an 1861 survey of the California/Nevada border in this area. In 1891, the Death Valley Biological Survey, the most in-depth study of its time, was carried out by C. Hart Merriam; the first ethnohistoric reports of the Indians of this area also came from this survey.

The largest and most productive mining efforts, which still continue today, came with the discovery of Cottonball borate by I. Daunet in 1875. After 1881, borate mining became established with the Eagle and Harmony Borax Works. Today, mining is restricted to colemanite, ulexite, and talc, which is extracted from open-pit mines (National Park Service n.d.:18).

The coming of the Euro-Americans changed the lives of the local Indians. Not only did the newcomers build permanent camps in the areas around springs that were the annual winter camping grounds, but they interrupted the subsistence and seasonal migration patterns of the
Shoshone in general. The Indians became more sedentary, adopting agriculture; they worked for the mines supplying mesquite wood for the borax processing plants, and ran horses and burros (Craib 1978:38; Crespi in prep:2). They also did various jobs at the Indian village near Furnace Creek, and helped in the building of many of the focal structures in Death Valley today, such as Scotty's Castle and Furnace Creek Inn.

Death Valley was established as a national monument in 1933, and more area has been added to it since that time (Craib 1978:38). Tourism became popular, and is the major industry and activity occurring within the valley itself. The current Timba-Sha Indians were restricted to the present Indian village shortly after the monument was established.

Genealogical research based on historic accounts, census data, and other government records as well as the Timba-Sha's own historical records, took the Timba-Sha Indian back 10 generations, and firmly established them as descendants of the Panamint Shoshone who seasonally lived in Death Valley (Herron 1981:5-6, 66-67). The contemporary Death Valley Timba-Sha Indians are derived from all of the districts from northern and southern Death Valley, Furnace Creek, and the surrounding mountains. Members of the tribe are related to most, if not all, of the historically known family lines occupying those areas. The group, to a degree, continues its cultural and historical patterns as an informally organized, geographically dispersed group. There continues to be a core group of families living in the village, centering around the Boland family line, which is historically from Furnace Creek, along with members of the Shoshone, Dock, and Cottonwood (Button) families. Traditional movement patterns are also represented in the continuation of seasonal movement out of the valley during the summer months. There is also a certain amount of movement related to the availability of employment and housing. Based on a current membership list, the population of the village is around 26; another 83 are on or near Sierra reservations, an area of traditional contact and the closest reasonable area of settlement away from the valley; 22 members are living with spouses on other reservations in Nevada; and 28 members are spread out in urban areas of California. The village is centered around older individuals who have lived most of their lives there, with the
rest their children and grandchildren. Cultural identity has been maintained; most older members still speak Shoshone and retain their cultural traditions (U.S. Department of the Interior 1982:23-25). Intermarriage with neighboring Paiute and Kawaissu have produced crosscut tribal and geographic lines, but all members of the tribe can claim at least $\frac{1}{4}$ or $\frac{1}{2}$ Shoshone blood (Crespi in prep:10).

Previous Research

Archaeological investigations in Death Valley have been conducted sporadically since 1925, when Malcolm Rogers examined an area near Saratoga Springs (Oetting 1980:12). National Park Service and Civilian Conservation Corps personnel did sporadic collecting and excavations in the 1930s and 1940s. From 1946 to 1957 the Park Naturalist, Edwin Alberts, surveyed and recorded many of the known petroglyphs and pictographs. From 1950 to 1952 Lydia and Thomas Clements collected material from many localities. In 1951 Lathrop and Meighan of the University of California Archaeological Survey conducted a survey along the Panamints and excavated the Coville Rockshelter (National Park Service n.d.:9) The vast majority of work, however, was done in the late 1950s by William Wallace and Alice Hunt. Wallace (1977) presents an overview of this work. He supervised surveys in portions of such areas as Mesquite Flats, Butte Valley, Saratoga Springs, Furnace Creek Wash, Ubehebe Crater, the Grapevine Mountains, Scotty's Ranch, and Wildrose Canyon, from 1952 to 1965. This resulted in the excavation of some sites, mainly rockshelters. Alice Hunt (1960) conducted extensive surveys in the area around the salt pan and lower gravel fans. All of this work, conducted as part of an extensive project sponsored by the University of Southern California, covered less than 10 percent of the monument area, and included judgementally picked areas mainly restricted to Death Valley proper (Oetting 1980:12; Barton 1983:13). More recent work includes Teague and Shenk's (1977) excavations at Harmony Borax Works, Craib's (1978) survey of mining claims, Oetting's (1980) survey along the Emigrant-Wildrose Highway, Hardesty's (1980, 1981) excavations in the vicinity of the Bullfrog mine, and Barton's (1983) survey of the northern and northeastern monument boundary. In general, very little of the monument has been investigated; the Timba-Sha survey adds to a fair
amount of data already collected from projects in the saltpan; and the Boundary Fencing Project presents new information on an area of which little is known.
Chapter 3
INTRODUCTION

The Timba-Sha Indian band currently occupies a rectangular, 60-acre parcel of land just south of Furnace Creek Ranch in central Death Valley National Monument (Fig. 7). This parcel was delimited shortly after Death Valley National Monument was established in 1933, and in 1936, the Bureau of Indian Affairs (BIA) and National Park Service (NPS) cooperatively constructed 12 adobe buildings and a connecting road system, and authorized residence via 5-year special-use permits. In 1977, eight trailers were added to the east of the adobes to complete the current Timba-Sha Village (National Park Service 1984:i; Peters 1983:4). Since receiving recognition as a tribe on January 3, 1983, the Timba-Sha tribe has expressed strong interest in converting the existing temporary village site to a permanent reservation. This would enable the tribe to have more control over activities in the village, receive loans or grants for housing improvements, and make it eligible for BIA and Department of Housing and Urban Development assistance programs for which the band was not eligible prior to its tribal status (National Park Service 1984:1). As a direct result of the Timba-Sha request for a reservation, the National Park Service (1984) did a planning alternatives study, evaluating several proposals for resolving the reservation issue, and a number of other proposals have been made to improve living conditions at Timba-Sha Village which would result in terrain alteration. These include expansion or reconfiguration of current village boundaries, rehabilitation of existing housing (already started at the writing of this report), improvement of roads, and updating or adding to waterlines, sewage and electrical systems. These improvements have the potential for impact upon archeological resources within and around the village, which initiated the archeological survey of Timba-Sha Village by two Western Archeological and Conservation Center (WACC) archeologists between March 7 and March 16, 1984.

The Timba-Sha alternatives study (Pkg. 360) proposes several alternatives for boundary adjustments, including leaving the 60-acre parcel as it is; modifying the configuration of the 60 acres to allow more usable acreage, which would entail excluding approximately
Figure 7. Timba-Sha Village and vicinity.
20 acres of usable land on the western boundary and adding 20 acres of
more stable land to the south and east of the present 40 acres of good
land; and expanding the present 60 acres to 80 or 100 acres, adding land
to the north, south, and east. The highest impact would be on the
village proper, with the proposed addition of more housing; the
installation of a 6-inch waterline to the village to provide fire
protection; the addition of a community septic system with leaching
field, sewage lagoons, and a package treatment plant--or, piping sewage
to the Fred Harvey sewage treatment plant approximately 1,600 feet to
the north at Furance Creek, which would require a pumping station; the
addition of utility lines, possibly subsurface; and the improvement of
or addition to village access roads, as well as the expected domestic
improvements, such as gardens and landscaping around houses (National
Park Service 1984:8, 14-16). The early construction of the village, as
well as previous archeological work in the area and historical records
indicate that Furnace Creek was one of many focal points of human
activity in Death Valley from prehistoric times. In order to attain
maximum coverage of the area with reference to any of the proposals that
might be granted, an arbitrarily defined 200-acre parcel with Timba-Sha
Village at its center was surveyed. The survey was carried out to
determine the present extent of archeological resources in the area so
that recommendations could be made for future management.

When the village was constructed in 1935, the Civilian Conservation
Corps (CCC) found "bits of pottery, beads, and a good many metates"
(Bowler 1935). Prior to the present survey, only one archeological
survey had been performed in the area surrounding Timba-Sha Village. As
part of an extensive survey of the saltpan from 1955 to 1959, Alice Hunt
(1960) covered the entire Timba-Sha survey area, recording six sites
in the vicinity of Timba-Sha Village, and suggested a habitation zone
extending from the mouth of Golden Canyon to the north end of the
Furnace Creek airstrip (University of Southern California n.d.). All
the sites were prehistoric and included three small artifact scatters
(site #37-55, 447-56, and 448-56), two rock circles (#458-56 and
464-56), and a large site (#11-56) containing about 80 rock cairns and
rock rings (University of Southern California n.d.) (Fig. 8).
Figure 8. The Timba-Sha survey area, with sites recorded by A. Hunt (1960).
Also of concern to the Timba-Sha community, but not related to the Timba-Sha survey, is the local cemetery located about 1.6 km northeast of the village, an isolated historic period burial 3.2 km southeast of the village, a bedrock mortar (BRM) cluster in the parking lot of the Furnace Creek Inn, and a dance spot somewhere in Mustard Canyon. These cultural resources were investigated and recommendations given for future management.

Methods

The purpose of this project was to locate, record, and evaluate cultural resources within a 200-acre parcel around the Timba-Sha Indian Village, to assess potential impacts, and to provide Death Valley National Monument management with recommendations for future treatment. A complete survey of the ground surface within the area was done to relocate archaeological features previously recorded by A. Hunt (1960) and to locate any other features or sites that had been overlooked or recently exposed. The survey was performed by two archeologists walking linear transects 10 m to 15 m apart over the portion of the survey area outside of the village proper. Because of the obvious physical barriers imposed by the presently occupied adobes and trailers within the village proper, survey methods in that area were less patterned.

Of the six sites located by A. Hunt, only one was relocated as defined, and 16 isolated artifacts were located for the first time. The five sites that were not relocated were either light artifact scatters or individual rock features. Two of these features, 458-56 and 464-56, were in the vicinity of the large site 11-56, and were probably included as part of this site. Sites 37-55, 447-56, and 448-56, all small artifact scatters north of the village, were never relocated.

The site relocated on this survey was recorded on a WACC site form, located on a U.S. Geological Survey (USGS) topographic map, and a site map was drawn using a Brunton compass set on a tripod. All features within the site were placed on the map, and those judged to best represent the site were photographed. Both color slides and black-and-white prints were taken of the site. A field number was assigned to the site by attaching a consecutive number to the WACC project designation, DEVA 84A. Timba-Sha Village was also recorded as
a site, and the available village map was updated with new features. Isolated artifacts were noted, given consecutive isolated artifact numbers, and located on the project map. Scatters of recent trash (i.e., later than 50 years old), which covers much of the survey area, were not recorded. All original field data, which includes site forms, site maps, field notes, and photographs, are on file at WACC.

Description of Sites and Isolated Finds

Two sites and 16 isolated artifacts were recorded on the Timba-Sha Survey (Fig. 9), and are described below.

DEVA 84A-2. This site is the current Timba-Sha Indian village. The village consists of a 60-acre parcel bounded by a barbed wire fence, sitting at the foot of an alluvial fan on the edge of the saltpan. The village itself occupies the eastern 40 acres of the fenced area, with the western 20 acres uninhabitable due to the instability of the saltpan soil. The village consists of 18 house lots that have, or at one time had, dwellings of some sort. Presently, seven of the lots have large house trailers occupying them, one of which is only in the village for the duration of the restoration work being done on the adobes; the other six were installed in 1977. Five lots have standing adobe structures and a variety of small house trailers, sheds, and outhouses; and six lots have foundations or depressed areas representing the remains of adobe houses, occasionally with a standing outhouse. All the adobe house lots have a grove of large tamarisk trees around them that have grown since the construction of the buildings by the CCC in 1936 (Figs. 10 and 11).

Included in the fenced area, in the unoccupied western 20 acres, is a large trash dump, which consists of a deep pit bulldozed into the ground, and an automobile graveyard littered with stripped cars and trucks. A bladed dirt road circles all but two of the adobe house lots and connects with the paved access road to Highway 190, 0.6 km to the east. An addition to this loop road forks out and runs beside the trailers, which line the eastern boundary of the fenced village area. Adobe pillars support the heavy wooden gate at the access road, and a recent fenced trash collection area sits inside the gate.
Image removed from the electronic edition in an effort to protect sensitive cultural resources.

Figure 9. The Timba-Sha survey area and recorded cultural resources.
Image removed from the electronic edition in an effort to protect sensitive cultural resources.

Figure 10. Timba-Sha Village (DEVA 84A-2).
Figure 11. A typical house lot with standing (but abandoned) adobe structure and currently occupied trailer in a grove of tamarisk trees.

Figure 12. Timba-Sha Village, between the saltpan and the Black Mountain alluvial fan. DEVA 84A-3 is in the foreground, the Panamint Mountains in the background.
Timba-Sha Village is about 0.6 km south of the Furnace Creek Ranch southern boundary, 1.1 km west of Highway 190 (see Fig. 7), and is located in the salt flat community. Honey mesquite is scattered on the sand dunes in the west half of the village, tamarisk grows in thick groves around habitation sites, and saltbush is scattered lightly throughout the area outside of those regions of heavy cultural use (Fig. 12). Elevations in the village range from 200 to 210 feet below sea level, and the alluvial fan trends westward from the Black Mountains. The village area has been altered by constant use so that it differs from the unaltered land to the east in the absence of cobble-sized alluvial gravels and small drainage channels.

DEVA 84A-3. This site was originally recorded by Hunt (1960) as 11-56, and was called "Moundville." Also included in this site, but recorded as separate sites by Hunt, are isolated rock features 458-56 and 464-56. The site is a large area on the gravel fan, which is scattered with rock piles and rock circles. A total of 42 features were recorded in this 356,000 m² site, including 33 rockpiles and 9 rock rings (Fig. 13). The rock circles consist of large cobbles from the alluvial gravels that have been placed in a circular pattern around a cleared area, usually ranging from 2 m to 4 m in diameter (Fig. 14). Six of the circles are clustered in the southwest corner of the site, and three are together in the south/central portion of the site. Three of the circles have breaks in the ring that may indicate an entryway facing west (Fig. 15). The rock piles consist of numerous cobbles from the alluvial gravels, which have been assembled to form cairns. These cairns range in shape from round to oblong, 1 m to 3 m in diameter, and are from 0.20 m to 1.05 m high (Figs. 16 and 17). With the exception of eight rock piles concentrated near the southeast corner of the site, they seem to be scattered randomly throughout the entire site area. One feature, which appears to be an eroded rock pile, has cremated human bone and two metal artifacts scattered among the cobbles (Figs. 18 and 19). The eroded condition of this feature suggests that more rock piles and rock rings may have existed on the site, but have deflated into the natural alluvial gravels due to erosion. A second rock pile had an
Image removed from the electronic edition in an effort to protect sensitive cultural resources.

Figure 13. DEVA 84A-3 site map.
Figure 14. Typical rock circle illustrating concave, cleared interior.

Figure 15. Rock circle with possible entryway.
Figure 16. Round rock pile, with cobbles piled to a height of 1.05 m.

Figure 17. Oblong rock pile.
Image removed from the electronic edition in an effort to protect sensitive cultural resources.

Figure 18. Eroded cairn with cremated human bone.

Figure 19. Photo of eroded cairn to illustrate scatter of bone.
upright wooden post driven into it, and resembles a mining claim. No artifacts were found on the site.

The site is about 150 m from the southeast fence corner of Timba-Sha Village, and is located in the salt flat/desert scrub vegetation community, with a sparse cover of saltbush, creosote, desert holly, and annual grasses (see Fig. 12). Ranging in elevation from 130 to 180 feet below sea level, the alluvial fan trends westward from the Black Mountains, stopping at the saltpan. The fan has a series of small drainages crisscrossing it, and sheetwashing is commonplace.

**Isolated Artifacts.** Isolated artifacts were recorded as such or as small nonsite clusters of artifacts. The majority of isolated artifacts were aboriginal, although purple glass was also included in this category. These artifacts seem to be part of a very sparse artifact scatter that runs continually on the alluvial fan edge, encompassing a zone of habitation mentioned by A. Hunt (University of Southern California n.d.) that runs from the north end of the Furnace Creek runway to the mouth of Golden Canyon, and are scattered throughout the survey area (see Fig. 9). Table 2 presents a list of the isolated finds and a brief description of each.

<table>
<thead>
<tr>
<th>I.A. NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Purple glass neck</td>
</tr>
<tr>
<td>2</td>
<td>5 pieces of Shoshone/Paiute Utility Ware; potbreak</td>
</tr>
<tr>
<td>3</td>
<td>Chalcedony flake fragment or retouched piece</td>
</tr>
<tr>
<td>4</td>
<td>White chert distal flake fragment</td>
</tr>
<tr>
<td>5</td>
<td>Unknown igneous basin metate fragment</td>
</tr>
<tr>
<td>6</td>
<td>2 rhyolite flat metate fragments</td>
</tr>
<tr>
<td>7</td>
<td>Quartzite flake</td>
</tr>
<tr>
<td>8</td>
<td>Mudstone flake</td>
</tr>
<tr>
<td>9</td>
<td>White quartzite proximal flake fragment</td>
</tr>
<tr>
<td>10</td>
<td>Brown chert core</td>
</tr>
<tr>
<td>11</td>
<td>Basalt flat metate fragment</td>
</tr>
<tr>
<td>12</td>
<td>2 basin metate fragments, rhyolite and quartzite</td>
</tr>
<tr>
<td>13</td>
<td>Basalt basin metate</td>
</tr>
<tr>
<td>14</td>
<td>Purple glass fragment</td>
</tr>
<tr>
<td>15</td>
<td>Purple glass fragment</td>
</tr>
<tr>
<td>16</td>
<td>Purple glass fragment</td>
</tr>
</tbody>
</table>
North and south of the village there was a fair scatter of recent trash, some in isolated piles and some loosely scattered, and a few fire-rings. Investigation of this trash revealed domestic artifacts such as bottles and cans that did not exceed 50 years in age. All food cans seen were of the crimped-seam variety, which was introduced around 1900 (Teague and Shenk 1977:131-132). Random sampling of company trademarks on bottle bases among the trash revealed all recent types, identified from Toulouse (1971) (Table 3).

Table 3
TRADEMARKS

<table>
<thead>
<tr>
<th>TRADEMARK</th>
<th>COMPANY</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>Owens-Illinois Pacific Coast Co.</td>
<td>1932 - present</td>
</tr>
<tr>
<td>MG</td>
<td>Maywood Glass Co.</td>
<td>about 1958</td>
</tr>
<tr>
<td>A</td>
<td>Hazel-Atlas Glass Co.</td>
<td>1920-1964</td>
</tr>
<tr>
<td>H</td>
<td>Anchor Hocking Glass Corp.</td>
<td>since 1938</td>
</tr>
<tr>
<td>1</td>
<td>Owens-Illinois Glass Co.</td>
<td>since 1954</td>
</tr>
<tr>
<td>B</td>
<td>Brockway Glass Co.</td>
<td>since 1925</td>
</tr>
</tbody>
</table>

The nature of the trash, much of it isolated in small scatters, suggested individual and random trash dumping in historic times by the Timba-Sha residents. The trash density lessens drastically away from the village. There was no evidence of a main dump site other than the very recent one in the western portion of the village. Collections of bottles, as well as some very recent rock alignments, attest to disturbance by village children playing close to the fence.
Discussion of Survey Results

In arid regions, areas near permanent water sources are known to be utilized heavily by the inhabitants and use of the survey area was expected to be heavy. Ethnographic studies indicate that the Furnace Creek area had one of the seven Shoshone winter villages identified in Death Valley (Grosscup 1977:117) (see Fig. 6). The two recorded sites represent evidence of this village, as well as of the heavy use of the area; one site represents early evidence of the village and the other represents the present-day village in its adaptation to the Euro-American use of the area. The Panamint Shoshone have migrated cyclically with the seasons from high to low elevation for longer than a century. The annual fall and winter encampments were located at well-watered sites with abundant resources (Crespi in prep.:1). Several occupation sites near Furnace Creek Ranch were noted, varying through time (Grosscup 1977:119). Before Timba-Sha Village was established, the Shoshone lived to the north of Furnace Creek Ranch, where the National Park Service visitors center is today, and to the west, where the airstrip is. During the construction of the runway, a brush wickiup was found, suggesting habitation of that area (P. Esteves 1984:personal communication; Belden 1959:11-3).

Furnace Creek was apparently the point of contact and intermixture of three linguistic groups: Shoshone from the north; Southern Paiute, who were also mixed at Ash Meadows 25 miles to the east; and Kawaiisu, who occupied southern portions of Death Valley. There was a small winter village at several of the springs there, thought to have been established after the borax works were founded when Bill Bullen and his son and five daughters moved there from Sigui. Since then, Furnace Creek has been headquarters for Shoshone from a considerable distance, living in a colony adjoining the modern winter resort and moving to Beatty, Saline Valley, Fish Lake, and elsewhere during the summer (Steward 1938:91-92).

The people from Furnace Creek hunted and gathered predominantly in the Panamint Mountains to the southwest; the Black and Funeral mountains were devoid of foods. Their main summer camps were at Wildrose Spring, Blackwater Spring, and a spring at the head of Death Valley Canyon (Steward 1938:92). Because of the nature of the vegetation in Death
Valley, groups traversed enormous areas and were not always able to return to the same winter village (Steward 1938:233).

DEVA 84A-2. Timba-Sha Village (DEVA 84A-2) represents a modern-day version of the Shoshone winter villages from the past. The name Timba-Sha apparently came from "tomesha," a Shoshone term meaning "ground afire" and used to describe Death Valley. By the late 19th century, Euro-American use of the area including mining and tourism, undermined the Shoshone's traditional movement and freedom of living areas, culminated by the formation of Timba-Sha Village in 1936 by the NPS. Prior to that time, Furnace Creek had become a gathering place for local Indians because jobs in the mining community were available after the Pacific Borax Company had claimed the area and made it their headquarters (Crespi in prep.:2). This is illustrated by Gower's (1969:139-141) description of the butchering of a steer at the ranch, "Indians with a team of horses stationed close at hand hitched onto the carcass and skidded it across ... to gallows near the barn. Here ... it was skinned out, cut up and divided; meat for shipment to the mine commissary; head, tail and entrails to the Indians. ..."

Prior to borax company use of the area there was a ranch there, owned by a man named "Bellerin Teck" Bennett, the first rancher on Furnace Creek. In 1880, William T. Coleman's company, the Greenland Salt and Borax Company, bought the ranch and established Greenland Ranch to provide accommodations for men at the borax mines, to provide alfalfa for horses and mules, and to raise cattle for food. Around 1920, the Pacific Coast Borax Company acquired the ranch and made it a terminus for the 20-mule teams, where the wagons were repaired, and the men and animals rested from the 20-day round trip through the Mojave Desert with borax from Harmony Borax Works. The ranch began taking guests in 1933, and the borax company requested that the local Indians be moved to NPS land, and so the current village was set aside for their use (Fred Harvey, Inc. n.d.; Weight 1955:4).

It was hoped that the village would become a profitable tourist attraction for the Indians but tourism, in general, dropped off with World War II. The adobe buildings began to deteriorate with age, and many were taken down in accord with the policy of eliminating vacant
houses, and eventually eliminating the village. But the Timba-Sha continued to live there, ranging in number from 42 in 1936, to 60 in 1944, and more recently 32 in 1982 (Crespi in prep.). The remaining members of the total 199 Timba-Sha Indians reside outside of the monument, mainly in the towns of Lone Pine, Bishop, Big Pine, Fish Lake, and Reno, although a few live as far away as Pasadena, the Rocky Mountains, and Florida. Only about 20 percent of the tribe uses Timba-Sha Village.

Today, there are 10 residents in the village, 4 in or around the remaining adobes (only three adobes are occupied), and 6 in the recent trailers. The adobe buildings are currently being stabilized and updated for reoccupation, and small portablehoustrailers supplement living space around some of the adobes. The western portion of the village supports a car graveyard, which was covered by the NPS once in the 1950s, and a recently dug trash pit. Historic trash scattered throughout the area represents deposits from the historic use of the village, probably prior to the NPS agreement to collect trash from the village in 1978, and mesquite beans and firewood are still collected in the area surrounding the village (Crespi in prep.:7). As in the past, the Timba-Sha leave during the summer, going to places like Fish Like and Lone Pine, where other tribal members live (P. Esteves 1984: personal communication). The archeological value of the village is minimal, since continual occupation of the area has altered or destroyed all earlier features.

DEVA 84A-3. It seems likely that DEVA 84A-3 is the early remains of one of the Furnace Creek winter villages. Similar sites were also found near Tule Spring and Bennett's Well, and were placed in the Death Valley III and IV periods (Ceramic period, A.D. 500-present) by A. Hunt (1960:115-116), because of the Rose Spring projectile points and glass beads recovered in the features. The lack of artifacts at DEVA 84A-3 makes this hard to substantiate, but similarity of the sites would tend to indicate that they are contemporaneous. The lack of artifacts at these sites is unusual, and may suggest short-term occupation, although the density of features argues against this. The site lies on an active gravel alluvial fan, and artifacts may have been moved by natural
causes. It seems most likely that this portion of the site may not have been occupied, representing a cemetery or ceremonial area where artifacts would not be expected. Interpretation of the features can only be speculative since none were excavated, and previous work on similar features indicates various uses.

A total of 33 rock piles were recorded, one of which included cremated human bone and two metal artifacts. Rock piles such as these have been interpreted as graves in southern California by many of those who have excavated them, and by A. Hunt (1960) based on the excavation of four such mounds at Tule Spring and Bennett's Well, and the occurrence of human bone in 18 others. Three mounds which did not contain burials were also excavated (Wallace et al. 1959). Two of the graves contained multiple burials, both with an adult and a child. The bodies were flexed, and in pits below the cairn (Fig. 20a). Rose Spring style projectile points were found associated with one of the burials. One burial was found lying on the surface and covered with cobbles, which is thought to be a Shoshonean period trait (Fig. 20b). The purpose of the nonburial mounds is unknown (Wallace et al. 1959).

Cremation was the most common means of disposal of the dead in Death Valley, although the lack of wood sometimes led to inhumation (Steward 1941:256). For interment, the body was usually wrapped in a rabbit skin robe, put on the ground, and covered with rocks, the bigger ones on top to keep off coyotes. An informant said the head was always at the higher end of the mound (Lowie 1924:227-229). Property was usually burned or buried along with the deceased. The circumstances of the death determined whether the body was buried in a house, in a talus slope, in the ground, or whether it was cremated (Steward 1941:256-257). At present, the body is placed in a coffin and buried in the ground. The large quantity of cobbles on the gravel fan on which the site is located, as well as the proximity of mesquite wood, made both cremation and the covering of the grave with cobbles practical. The cremation recorded on this site appears to have been placed on the surface and covered with cobbles, since no pit was identified. Observed bone included parietal, occipital, frontal, temporal, and mandible fragments of the skull, and rib, vertebra and long bone fragments. The majority of the bone was moderately burnt but not heavily calcined,
Figure 20. Types of rock cairn burials in Death Valley. (a) represents a flexed body in a pit covered with cobbles, and (b) represents a flexed body lying on the surface and covered with cobbles (from A. Hunt 1960: 116).
especially the skull, rib and long bones, but the vertebra were only lightly burned, and the spinous processes did not seem burned at all. This might suggest that the corpse was laid out on its back with brush piled over it for cremating, thus preserving the vertebra from more extensive burning. It is possible that this feature is a primary cremation, with the cairn built over the cremated bone, although other burials in the monument suggest that the cremated bone may have been placed in baskets for interment (Craib 1978:53). It is unknown whether the metal bottlecap and small piece of metal found with the cremation are associated with it, or whether they washed in.

A total of nine rock rings were also recorded on the site, which are very common in southern California. They are normally considered house circles for temporary sleeping places, constructed either by placing local boulders in a circle around a cleared area, or removing the large rocks from an area and sweeping the smaller rocks outward from the center, to create a cleared depressed area.

Typical temporary dwellings of the Panamint Shoshone consisted of a gabled house. Two vertical posts supported a ridge pole, against which sloping roof poles were leaned, giving an elliptical or circular ground plan (Fig. 21). Professor George H. Anderson, California Institute of Technology, observed rings of stone marking former house sites (Steward 1941:233). It is assumed that the rocks were used to support the structure.

These dwellings tend to be consistent in size, ranging from 1.1 to 1.7 m in internal diameter, with walls less than three tiers high. The walls would provide protection from the wind (Wallace 1968:63-64). Craib (1978:51) recorded a number of rock rings, most of which were in or near Furnace Creek Wash. As with DEVA 84A-3, these sites had few or no artifacts to place them temporally. The rock rings are similar to those recorded by Wallace, with a mean internal diameter of 1.4 m; all lie on desert pavement. Rogers (1966:43-47) found hundreds of sleeping circles in his work in southern California, varying from cleared areas to boulder-rimmed types, all found on desert pavement. Ninety percent of those found were circular, but oval and rectangular varieties are also seen (Fig. 22). Rogers places these in the early San Dieguito phases, corresponding to the Paleo-Indian and Desert Archaic phases, as
Figure 21. Typical Panamint Shoshone housetypes in a mesquite thicket in Death Valley, 1931 (Grosscup 1977:149).
Figure 22. Rock circle types as defined by Rogers (1966:44) in his work in southern California. The features at DEVA 84A-3 are most similar to A, D, and G.
did Stanley (et al. 1970:4-18) who excavated two cleared areas. Rogers also said that later peoples, such as the Shoshoneans, Paiutes, and Yumans, built boulder-rimmed clearings that could be distinguished from the early structures in many respects; their topographical setting varied greatly from early circles, being close to available water sources and frequently at higher elevations near mountain springs or water holes, and never on desert pavement or terraces of fossil streams. The later people also always left door apertures in the boulder ruins, oriented either to the east or south.

Stanley (et al. 1970:4) suggested that the cleared, early house rings appear to be the floors of brush structures, such as those reported for the Paiute, Shoshone, and other Great Basin Indians, although excavation did not reveal any subsurface cultural or structural evidence.

A. Hunt (1960:177-184) found over 1,500 rock circles, both concentrated in large numbers and isolated, in southern Death Valley and distinguished two types; those with and those without pits, as defined by excavations. The former were thought to be mesquite storage pits, where rocks had been removed from the center to create the pit. Plant remains were found in several of the pits, which are about 3 m in diameter and less than 1 m deep. The rock circles without pits are similar to those with pits. They were probably temporary sleeping places, although there is little evidence of fire or artifacts. All of these rock rings have been dated as of the Ceramic period. They are similar to the late sleeping circles mentioned by Rogers, close to water sources such as Travertine, Texas, and Nevares springs, Bennett's Well, and Tule Springs; some have possible entries.

The number of features located at DEVA 84A-3 suggests use by a large group in a short time, or by a smaller group many times. From what is known about the Shoshone use of the area, the latter seems more probable. The occurrence of sleeping circles and associated burial mounds in not uncommon on the gravel fans near active springs and mesquite stands, representing semipermanent fall and winter villages, reoccupied repeatedly throughout the years. The exact percentage of the site represented by the recorded features is unknown since the current Timba-Sha Village and Furnace Creek Ranch may have destroyed a portion
of it. It is possible that the section recorded represents a cemetery area for the main habitation site now lying under the present village, with the rock circles at the eastern edge of the living area. This would help explain the lack of artifacts on the site.

**Isolated Artifacts.** It is very possible that some of the isolated artifacts located on the survey may be associated with either DEVA 84A-2 or DEVA 84A-3, although none are significant enough to make a difference. They may also represent artifacts that have washed in, or were deposited by people passing through. The number of ground stone artifacts to the southeast of the Timba-Sha Village suggests the remains of a possible site, or may represent more habitation area of DEVA 84A-3, since ground stone is not likely to wash in. However, the evidence of recent disturbance by village children close to the fence also suggests that these metate fragments may be secondarily deposited. This is further indicated by a basin metate and handstone found on a chair in one of the house lots in the village.

**Related Work**

Also of interest to the Timba-Sha Indians and the local NPS administration was an accurate map of the present Timba-Sha cemetery, an evaluation of a bedrock mortar outcrop in the parking lot of the Furnace Creek Inn, a field check of an isolated rock cairn burial previously recorded, and the location of a ceremonial Shoshone dance floor near Mustard Canyon. This work was done as part of the Timba-Sha survey (Fig. 23).

**The Timba-Sha Cemetery (DEVA 84A-4).** The current Timba-Sha cemetery is located about 550 m northwest of Furnace Creek Inn, and 1.6 km northeast of Timba-Sha Village. Specifically, it lies in the NW¼ of the NE¼ of Section 22, T17S, R1E, sitting on the relatively flat end of a small ridge trending west off of the toe of the Black Mountains. There is a large brick-laid monument in the center, 13 rock-lined graves in a line to the south of the monument, two isolated rock-lined areas that may be graves, and three areas with a few cobbles or a depression that may also be graves. Two burned areas were observed, and
Figure 23. The location of work related to the Timba-Sha survey.
five graves have the remains of stone or wooden markers on their south sides (Fig. 24). The exact number of graves at the cemetery is unknown, since it was reported that bones from unmarked graves were disturbed when the monument was put in (M. Esteves 1984:personal communication). The occupants of only two graves are known, as well as that of the monument. While the occupants of the remaining graves may be known, there is a reluctance on the part of the present Indians to discuss earlier events, in keeping with a traditional avoidance of invoking the names of the dead (U.S. Department of the Interior 1982:25). The monument (#1) covers the grave of Serafin Esteves, a brick layer who helped build Scotty's Castle and the Furnace Creek Inn, who died in December 1938. Bricklayers who had worked with him put up the monument in his memory. In Grave #3 are the remains of Rosie Boland Esteves, who was buried February 11, 1984. She was the first person buried there since her brother John Boland, who died of lobar pneumonia, was buried in Grave #2 in November 1944; she had been married to Serafin. Rosie Esteves was buried in a casket, and her belongings were burned at the funeral, as evidenced by a burnt area on the pavement (Harding 1984). A second area is also burnt, but it could not be associated with a specific grave. Rock-lined graves in a row are very suggestive of Christian influence on the Indians, since graves at earlier sites are usually marked by cairns and are not in any recognized order. This would indicate that at least the last 13 graves are post-1540, the time of the first influx of Euro-Americans into southern California. Christian conversion of Indians by the early Spanish is well-known in California.

A plane table and alidade map was made of the site, and photographs were taken. Unfortunately, the probability of unmarked graves in the clear flat areas of the cemetery made it impossible to provide an accurate estimation of the remaining space for future burials. It is suggested that access to the cemetery be restricted to prevent vandalism or mindless destruction of the graves. At least one of the isolated rock rings looks as if it were recently placed there to imitate the graves.
Image removed from the electronic edition in an effort to protect sensitive cultural resources.

Figure 24. Timba-Sha Cemetery (DEVA 84A-4) map.
Isolated Grave (DEVA 77-43). The isolated historic Shoshone grave is located 1.9 km south of the intersection of Highway 190 and the Dantes View Road, in the SE1/4 of the SE1/4 of Section 25, T26N, R2E. It was recorded by Craib (1978:53) as DEVA 77-43, and consists of a small rock cluster, 3 m by 3 m, situated in a shallow rockshelter at the summit of a hill adjacent to the recently active U.S. Borax Billie Mine. Also in the overhang were three tin cans, a large branch, and small sticks stuck in cracks near the top of the shelter. Beneath the rock cover of the grave vegetal material was observed along with a portion of dried animal skin. A portion of a bottle-necked basket was noticed under the vegetal material, possibly containing a cremation. On July 28, 1977, a maintenance crew from the NPS put a vault of concrete over the burial to preserve and to protect it.

Lowie (1924:279-282) mentioned that several groups of Shoshone would take corpses far off into the mountains to bury them, and clefts or caves were used. Rocks were used to keep out the coyotes. Many Indian groups buried belongings with the dead; this might account for the animal skin. Small sticks stuck in cracks in shelters were interpreted as "spirit sticks" by Campbell (1931) who noted similar features in Joshua Tree National Monument in southern California. The sticks served as "spirit protectors" or taboo signs to guard the cave's contents against robbery. This would make sense in the context of this burial. The only other features of this type from the Death Valley region were recorded in the Coville Rockshelter in northwest Death Valley near Ubehebe Crater (Meighan 1953:13). Pauline Esteves (1984: personal communication) said it was probably a special burial, since it was unusual to bury someone in a shelter like that. Only one other burial in a rockshelter has been recorded in Death Valley; Wallace (1962b) excavated the flexed body of a young person under several boulders in a rockshelter near Ubehebe Crater. The burial was accompanied by shell beads, projectile points, mammal bones, and pinyon nut shells, and was assigned to the Ceramic period.

The DEVA 77-43 grave was in the same condition as shown by photographs taken in July 1977, with no evidence of disturbance. The inaccessibility of the shelter, as well as the closing down of Billie mine activities, suggests that the grave is relatively safe from disturbance.
Bedrock Mortar Outcrop (DEVA 84A-1). The BRM cluster in the gravel parking lot of the Furnace Creek Inn, mentioned by A. Hunt (1960:260), was recorded as DEVA 84A-1. It lies in the SW¼ of the NE¼ of T27N, R1E, and consists of a 7 m by 3 m exposure of limestone containing 10 mortar holes that are in two groups (Fig. 25). The holes average 15 to 20 cm in diameter and from 5 to 40 cm deep. The bedrock has scars from a backhoe bucket, and pieces have been broken off and are lying around it. The occurrence of the mortars so near a major spring such as Travertine Spring is not unusual, although this is one of only three recorded in this area (A. Hunt 1960:258). The depth of some of the cups suggests continual use over a long period of time, and the outcrop probably represents all that is left of a larger site destroyed or covered up when the inn was built. Because of the heavy disturbance of the BRM outcrop and destruction of anything that may have been related to it, the archeological significance of the site has been greatly reduced. However, the outcrop has value as an interpretive exhibit.

Ceremonial Dance Floor. Finally, an unsuccessful attempt was made to locate a ceremonial dance ground reported to be near the head of Mustard Canyon and Highway 190. Pauline Esteves (1984:personal communication) said that it was not marked in any way, consisting only of a flat area that was worn from use. She said it was last used over 100 years ago in her mother's time, and may not be visible today, although it used to be visible from the road if the light was right.

Ceremonial dances were held at intervals in at least two spots in the valley. One site was near the mouth of Cottonwood Canyon and was marked by rocks in a maze-like design. The second area was on a ridge north of the present Mustard Canyon Road. The director of a maintenance crew in the process of building a road that would have bisected the dance spot was informed about it. The route of the road was changed to a parallel canyon to preserve the site (Belden 1959:11-15). The Indians used this dance spot when people went to and from the Cow Creek hot springs for ceremonial purposes (P. Esteves 1984:personal communication).

All ridges north of and adjacent to Mustard Canyon were investigated, but no evidence of a dance spot was seen, although there
Figure 25. Bedrock mortar outcrop (DEVA 84A-1) located in the Furnace Creek Inn parking lot.
were a few extremely flat, desert paved areas that would have been ideal for this use. It is possible that no evidence of the dance floor exists today, with the areas worn by use returning to their original varnished state.

Conclusions

The results from the Timba-Sha Survey revealed evidence of the seasonal use of the Furnace Creek area by prehistoric inhabitants of Death Valley. Historic records, as well as ethnographic studies of the Panamint Shoshone, indicated that the area around Timba-Sha Village was the locus of a winter, spring and early summer village of the transient Shoshone, who would go to more favorable areas during the late summer and fall. The microenvironmental habitat of the area was ideal for the Indians, not only because of the nearby springs, but also because of the resources supplied by the mesquite stands among the dunes. The development of Furnace Creek Ranch by Euro-Americans to accommodate mining activities in the valley restricted the use of the area by the Indians, but provided more resources for their winter settlement since work was available with U.S. Borax. This culminated in the formation of Timba-Sha Village (DEVA 84A-2), which replaced the impermanent villages of the past, represented by DEVA 84A-3.

There is no question that DEVA 84A-3 was larger, or that many such sites existed before the Indian village, Furnace Creek Ranch, and the NPS building were constructed. The natural process of the gravel fan, as well as cultural use of the area, has destroyed or covered much of what was once here. The possibility of subsurface remains is high, especially under the ever-shifting dunes, as is the location of more rock piles and circles.

DEVA 84A-3 has the potential for revealing much needed information about early Shoshone settlement and burial patterns; little research has been done in that area, and only a few rock piles or circles have been excavated. The dunes to the south of Timba-Sha Village also have the potential of providing buried sites, possibly evidence of even earlier use of the area. On the other hand, Timba-Sha Village does not have the potential of providing further archeological information, due to the continual heavy use of the village since it began in 1936. Timba-Sha
Village would be more valuable for ethnographic studies of the current inhabitants, who could provide useful information on their own history.

Recommendations

This project was carried out to provide NPS management with recommendations for further treatment of the area adjacent to, and including, Timba-Sha Village. The alternatives study of the reservation issue provided various proposals, all of which meant terrain alteration to the north, south, and east of the current Timba-Sha Village boundaries, and extensive disturbance within the village itself. The archeological survey recorded an extensive prehistoric site to the east of the village which, besides having scientific importance, is particularly sensitive in that it contains human remains. Any impact to the site would require extensive mitigation measures. Therefore, it is recommended that the area east of the present Timba-Sha Village be avoided for expansion or construction, and if it cannot be avoided, that impact to the site be extensively mitigated to recover all archeological information present. No significant cultural remains were recovered to the north or south of the village, so expansion or construction in these areas can be given clearance upon request, with the provision that the presence of an archeological monitor may be required during construction.

Future Management Planning. Further archeological research on the prehistoric site DEVA 84A-3 is suggested, since it is thought to be very significant in the prehistory of Death Valley. The site is slowly deteriorating, both from the heavy cultural use of the area and ongoing natural forces. The eroded state of Feature 4, with the exposed cremated bone, is mute testimony to the slow but steady deflation of this site; with the destruction of these features goes the loss of important information.
Part 4

Boundary Fencing Project
Chapter 4
INTRODUCTION

As part of a long-term cultural and natural resource management plan (National Park Service 1976:67-71), Death Valley National Monument proposed to install barrier and drift fences along the northern and northeastern boundaries of the monument to prevent feral burros and range cattle from impacting the monument. In 1983, in accordance with NPS policy, an archeological survey was conducted by WACC archeologists in which 8 prehistoric and historic sites, 48 isolated artifacts, 28 rock clusters, 2 isolated mines, and 1 possible petroglyph were recorded, their significance assessed, and fence impact predicted (Barton 1983).

Direct impact on the archeological sites by fence construction was considered negligible, since the construction involves hand-driven steel posts and hand-strung barbed wire and minimal vehicular traffic along the corridor. However, it was also recognized that the possibility of indirect impact expanded dramatically due to increased traffic in the corridor and the greater likelihood of vandalism to the sites. To mitigate potential impacts, Death Valley administration requested that the surface artifacts be collected on four undisturbed, significant archeological sites. This included two open-air artifact scatters and two rockshelters within the fence corridor or within 100 m of it. The NPS proposal led to the initiation of archeological data recovery from the four sites, all located in the Grapevine Mountains in southwestern Nevada (Fig. 26), by two WACC archeologists (the author and J. Michael Bremer), between March 19 and March 29, 1984.

No previous archeological work has been done in the area in which the four sites are located, although three studies were done in the Grapevine Mountains, including Kritzman's excavations of two rockshelters in Grapevine Canyon (1966; 1979), and Wallace's (unpublished) survey around Strozzi Ranch in which 53 sites were recorded. Historical research has also been carried out near the project area, but is mainly concentrated in the Bullfrog Hills (Craib 1978; Hardesty 1980, 1981; Tweed 1976; Greene and Latschar 1981). Extensive research was done to the south of this area by Coombs (1979b).
Figure 26. The Boundary Fencing Project sites and vicinity, including associated sites and isolated artifacts.
Information about previous archeological work is lacking on the areas to the north and east. In general, there is no archeological information on this area prior to the 1983 WACC survey (Barton 1983), which only covered a very small portion of a very large area.

The project was carried out in compliance with the Historic Preservation Act of 1966 which requires the assessment of properties that might qualify for the National Register of Historic Places. With the exception of a few patented mining claims, all the land bordering the monument along this portion of the Boundary Fencing Project is under the jurisdiction of the Bureau of Land Management.

Methods

The purpose of this project was to collect surface artifacts on four significant sites to recover information that might be lost through indirect disturbance from the boundary fence line. The strategy determined on to accomplish this goal was to provide extensive documentation of the sites, and included large-scale drawings, photography of all sites, collection of surface pollen and carbon, assessment of site environmental and topographical relationships, and assessment of site quality, formation processes, depth, and condition. Sites DEVA 83A-7, 8, and 10 were to be 100 percent surface collected, and DEVA 83A-9, due to its size, was to be collected in systematically placed 2 m by 2 m squares to provide a sample greater than 50 percent of available artifacts.

After each site was relocated, the site boundaries were redefined and a plane table and alidade contour map was drawn. Collection methods varied among the three small sites (DEVA 83A-7, 8, and 10) and the large site (DEVA 83A-9) because of the differences in surface artifact densities. On the three smaller sites, all surface artifacts were marked with a piece of flagging tape and point plotted on the site map. This was not feasible with DEVA 83A-9 because of the large number of artifacts present, so this site was collected in 2 m by 2 m units. This was accomplished by establishing a north/south base line through the center, and longest, axis of the site. From this base line, marked by a string, a 50 m and 30 m tape (end to end) were stretched parallel to, and 2 m from, the base line, and each 2 m square was marked off between
the two lines. All artifacts on the surface of these squares were collected. This process was continued by moving the 50 m and 30 m tapes 2 m from the previous line and collecting each 2 m unit, until the entire site was covered. As artifact densities lessened, transects were shortened. Projectile points, complete ground stone (including bedrock grinding slicks), and various exotic artifacts (i.e., shell, glass beads) were point plotted on the site map. Core samples were taken from each site with a hand-coring tool to determine depth of the midden, as well as to provide flotation samples.

All individual features within a site were recorded, mapped, and photographed, and photographs were taken of each site. When isolated diagnostic artifacts were found in the course of the fieldwork, they were plotted on USGS topographic maps and collected. Two habitation sites located on BLM land near DEVA 83A-9 were also recorded on WACC site forms and photographed since they are possibly related to the project. All collected artifacts, maps, photographs, and records from this project are housed at WACC.

Description of the Sites

The four sites investigated in this project are described by Barton (1983:35-44), but descriptions will be repeated here, and additional comments are added for this report.

**DEVA 83A-7** is a small rockshelter carved into a limestone outcrop exposed at the head of a steep narrow canyon (see Fig. 5). It is 13 m long and 4 m deep at the deepest point, with a relatively flat terrace fronting the shelter, dropping out into a steep, unstable talus slope 3 m from the shelter opening. Benches of limestone bedrock add some stability to the slope (Fig. 27). A brush wall, 1.5 m long by 1 m wide by 1 m high and made of pinyon and juniper branches, divides the main section of the shelter (8 m) from a shallower portion and comes within 20 cm of the shelter roof (Fig. 28). The floor of the shelter is flat, dropping about 0.5 m at the brush wall. The roof of the main shelter is heavily soot-blackened, while that of the shallow part has only minimal soot. The shelter is filled with 10 cm of unconsolidated sediment (silt, sand, and roof spalls) that is heavily mixed with small bits of
Image removed from the electronic edition in an effort to protect sensitive cultural resources.

Figure 27. DEVA 83A-7 rockshelter.
Figure 28. The brush wall with sandal and metate in situ. Note the fire-cracked rocks against the shelter wall.

Figure 29. Looking west at DEVA 83A-7 showing the environment. The author illustrates the size of the shelter, and the ridge in the background shows the availability of pinyon pine.
charcoal, pinyon nut shells, and partially burned wood. Two concentrations of fire-cracked rock were noted, one 2 m by 2 m scatter in the center of the main shelter, and a 2 m by 0.5 m scatter against the back of the shelter by the brush wall. A metate, sandal, and six pieces of flaked stone were in the shelter, with the majority of recovered artifacts, including one sherd, scattered down the talus slope.

A low shallow extension of the shelter extends 11 m to the east of the main shelter, but does not appear to have been utilized to any great extent. Very little charcoal and no cultural material are present on the more consolidated sediment floor, and the low ceiling (which is not soot-blackened) and shallow depth make this extension unsuitable for habitation. It may have been used for storage or for everyday activities by the inhabitants of the main shelter. A few smaller shelters are above the main shelter, but show no evidence of use.

The shelter is located in a southeast-facing cliff along the northern side of a northeast-trending valley. At an elevation of 7,100 feet, it is less than 1 km from the crestline of the Grapevine Mountains. The valley is part of the upper reaches of a major northeast-trending valley system that drains the Grapevine Mountains, emptying into Sarcobatus Flats. The rockshelter is in the pinyon/juniper woodland zone with vegetation sparse around the shelter and on the talus slopes but becoming more dense above the cliffs and on the ridges below the cliffs. A few pinyon trees are scattered on the talus slope, and a sparse cover of Mormon tea, sage, and snakewood, as well as a few junipers, surround the shelter (Fig. 29). The woodland gives way to sagebrush scrub less than 1 km down the valley (see Fig. 4).

The shelter provides an unobstructed view to the northeast, east, and southeast down the valley system, onto Sarcobatus Flats, the Bullfrog Hills, and the mountains beyond. From a peak on the crestline of the mountains, 0.7 km to the west, there is an unobstructed view to the west across the northern end of Death Valley.

DEVA 83A-8. This is a light artifact scatter and possible feature at the base of a bedrock prominence in a 24 m² area. The site consists of two cultural loci, a flaked stone scatter on the east side of the
prominace, and a sherd scatter on the west side (Fig. 30). Both loci may represent single events, one an unsuccessful knapping event, and the other a potbreak. The feature appears to be a structure foundation, represented by a roughly round partial outline of cobbles, some three tiers high, enclosing a raised area of soil. The feature is 4 m north/south by 3.5 m east/west in area, and abuts the flat south face of the bedrock prominence (Fig. 31). A few partially burned pieces of wood are scattered around the area; they appear very recent, and may be from a lightning-struck tree or recent fire. The bedrock prominence affords the site good protection from the wind, as do the high walls of the narrow valley where it is located.

The site soil consists of talus from the bedrock outcrop and unconsolidated alluvial silt, sand, and gravel from the small drainage adjacent to the site. At an elevation of 6,600 feet, the site sits at the mouth of a small northeast-trending valley, the same one overlooked by DEVA 83A-7, 0.6 km to the west. The site is located about 100 m west of the confluence of two major valleys draining the northern Grapevine Mountains. Vegetation in the area is on the lower fringes of the pinyon/juniper woodland, with a moderate cover of pinyon pine, sage, snakeweed, Mormon tea, and one juniper on top of the prominence (Fig. 32). The sagebrush scrub, and a general absence of trees, begins only a few hundred meters down the valley to the northeast.

DEVA 83A-9 is a large, open-air site, approximately 64 m by 56 m in area, located to the north and leeward side of a shallow saddle between the toe and the upper slopes of a relatively low, northeast-trending ridge (Fig. 33). The site consists of a moderate scatter of artifacts, four features, and two bedrock grinding slicks. Artifacts are more densely concentrated in a 25 m by 12 m dark midden area in the center and flatter portion of the site. The four features included two linear rock alignments and two clusters of cobbles thought to be hearths (Fig. 34).

Feature 1 consists of a 4 m long alignment of medium-sized basalt rocks, ranging in width from two courses and 0.5 m to four rocks and 1 m, and an adjacent 4 m by 3.5 m cleared area to the northeast. The majority of the rocks are well set in the ground, and apparently derived
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Figure 30. Site map of DEVA 83A-8.
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Figure 31. Feature 1, possible structure at DEVA 83A-8.
Figure 32. DEVA 83A-8 looking northeast and illustrating the pinyon/juniper and encroaching sagebrush.

Figure 33. DEVA 83A-9 looking east towards Sarcobatus Flats. Site is located on the saddle between the ridge and small knoll in foreground.
Image removed from the electronic edition in an effort to protect sensitive cultural resources.

Figure 34. DEVA 83A-9 site map.
from outcrops on the site. The feature is located near the large basalt
outcrop on the eastern boundary of the site in the dense artifact area.
Feature 2 is also a 4 m alignment of basalt rocks, but consists of
smaller rocks more loosely scattered than those of Feature 1. A 4 m by
2.5 m cleared area is to the northeast of the alignment, and a grinding
slick on a rhyolite boulder lies 2 m to the east. This feature is 14 m
east of Feature 1, towards the eastern boundary of the midden area.
Feature 3 is a small concentration of cobbles, 1 m in diameter, possibly
a hearth. A basalt handstone was in the center of the feature. The
feature is located 17 m west of Feature 1 in the center of the main
artifact scatter. Feature 4 is a second possible hearth, consisting of
a concentration of cobbles 1 m in diameter. It is located outside of
the artifact scatter, on the southern edge of the saddle, against a
large boulder. A large packrat nest is on the other side of the boulder
(Fig. 35).

The two bedrock grinding slicks are located on the eastern boundary
of the site. Both slicks are flat areas of wear covering most of the
surface of large rhyolite boulders ranging in size from 0.5 to 1 m long
by 0.5 m wide. The first grinding slick, mentioned earlier, is located
by Feature 2. The second is outside of the artifact scatter, 11 m east
of the first. Finally, two small concentrations of sherds were located
beyond the southwest boundary of the site, on the steep slope of the
higher ridge. The concentrations are approximately 1 m wide, and range
between 4 m and 20 m long, scattered down small erosional channels
coming off of the main ridge.

The ridge where the site lies is at an elevation of 6,200 feet. It
projects into a major valley which drains the Grapevine Mountains.
Immediately below and to the northeast of the site, the valley broadens
out and is bordered by well-defined alluvial terraces. Approximately
1 km to the southwest is the head of the box canyon, consisting of steep
cliffs. The site is covered with unconsolidated alluvial and colluvial
sediment, predominantly silt and sand. The toe of the ridge is exposed
bedrock, and shelves of bedrock are exposed throughout the site area
(see Fig. 33). The deep soil to the north of the saddle is a dark
brown color, suggesting a cultural midden. A small drainage runs just
to the northwest of the site.
Image removed from the electronic edition in an effort to protect sensitive cultural resources.

Figure 35. The features at DEVA 83A-9.
The site lies predominantly in the sagebrush scrub vegetation zone. A moderate cover of sage, snakeweed, Mormon tea, and mountain mahogany cover the area, with a few scattered pinyon and cacti. The pinyon/juniper woodland begins at higher elevations less than 1 km to the west. Willow Spring, once a permanent water source, occurs only 0.5 km to the north of the site. It seems likely that there may have been another spring at the head of the box canyon. Although the valley is lower than the previously mentioned sites, it drops off in elevation sharply enough to afford an excellent view of Sarcobatus Flats to the northeast, as well as the northern terraces of the Grapevines to the south. Cattle trampling and dung are present.

DEVA 83A-10 is a very small rockshelter, 1.5 m wide and 2 m deep, located in a bedrock outcrop in the wall of a small valley. Two metates and a few flaked stone artifacts were recovered, both in the shelter and on the slope in front of the shelter. The roof of the shelter has a thin layer of soot, and small pieces of charcoal are scattered in the upper level of the fill, a fine unconsolidated sediment 30 cm deep. This same sediment, as well as spalls and talus from the bedrock outcrop, form a steep slope down to a wash 12 m southeast of the shelter (Figs. 36 and 37).

At an elevation of 5,600 feet, the bedrock outcrops along the western wall of the small arroyo, giving the shelter an eastern exposure. Headward erosion of the arroyo into bedrock has formed a dry waterfall and a tiny box canyon in the vicinity of the site. The wash is one of two major washes that drain the small catchment basin where the site is situated. These two washes converge about 1 km north of the site and empty into the broad valley containing DEVA 83A-9. The site lies in the sagebrush scrub vegetation zone and includes a moderate cover of mountain mahogany, mormon tea, snakeweed, and annual grasses. One Joshua tree is located below the shelter by the wash (Fig. 38). Recent rodent disturbance in the shelter is in evidence.

Additional Sites. DEVA 83A-9 is one of three sites occupying the low ridges around Willow Spring. Two other large open-air sites are located in saddles on ridges to the southeast and northeast of the
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Figure 3b. DEVA 83A-10 site map.
Figure 37. J. Michael Bremer sitting in DEVA 83A-10 to illustrate the small size of the shelter.

Figure 38. The general environment of DEVA 83A-10, looking north.
spring on BLM land (see Fig. 26). The sites, designated BLM 1 and BLM 2, have been included in this report because of their proximity and similarity to DEVA 83A-9, as well as their locations near Willow Spring.

BLM 1 is the smallest of the three sites, occupying an area of 600 m² on the north and leeward side of a small saddle extending between the major east/west-trending ridge containing Willow Spring, and a small hill at the ridge toe. The site is located 0.5 km northeast of Willow Spring, at an elevation of 6,130 feet. A moderate scatter of artifacts litters the relatively flat side of the saddle, in a black deep-seated soil probably representing a midden (Fig. 39). Artifacts consist mainly of white chert and obsidian chipping debitage; numerous bifaces, points, a hammerstone, sherds, a few pieces of ground stone, and a glass bead were also seen. Two features were located on the site. The first is a 1 m by 0.5 m cobble cluster possibly representing a hearth. The second is a large rock pile, 2 m by 1.5 m in area, possibly a burial. Vegetation on the site is a moderate cover of sage, snakeweed, mormon tea, with pinyon and willow nearby at Willow Spring. Cattle disturbance is heavy.

BLM 2 is a 3,000 m² scatter of artifacts located on a small limestone knoll in the center of the valley, at the end of a low, gently sloping ridge that connects to a larger ridge to the northwest. At an elevation of 6,150 feet, the site is bounded on the north and south by washes, and protected from the north by the ridge containing Willow Spring, 0.6 km to the west. A moderate to dense scatter of artifacts is confined mainly to a dark brown/black midden area in the saddle of the small ridge (Fig. 40). Obsidian, chert, and chalcedony flaked stone (including bifaces and points), ceramics, and ground stone were observed, including a large rhyolite bedrock grinding slick. Three features were recorded, including two rock piles and a rock ring. Vegetation is a sparse to medium cover of sagebrush, mormon tea, and mountain mahogany with pinyon, juniper, and willows nearby. Recent disturbance includes heavy cattle trampling and a mining claim cairn.
Image removed from the electronic edition in an effort to protect sensitive cultural resources.

Figure 39. BLM 1 site map (scale is approximate).
Image removed from the electronic edition in an effort to protect sensitive cultural resources.

Figure 40. BLM 2 site map (scale is approximate).
Chapter 5
ARTIFACT ANALYSIS

A total of 2,519 artifacts and 13 core samples were recovered from the four sites investigated. The recovered artifacts were analyzed (1) to help define and date the sites, (2) to help interpret the types of activities that occurred at the sites, and (3) to provide an indication of the value of the sites for further work. Table 4 provides a tabulation of the material recovered. The artifact assemblages are described by individual site. Since DEVA 83A-9 contained 98 percent of the artifacts recovered, the assemblage from this site was described first and includes the definition of the artifact types, a description of the type of analysis done for each artifact type, and a definition of terminology used. This will not be repeated in the descriptions of the smaller sites that follow. A few selected artifacts from the BLM sites will also be described.

Table 4
DISTRIBUTION OF ARTIFACTS AND SAMPLES RECOVERED FROM FENCE LINE SITES

<table>
<thead>
<tr>
<th>DEVA SITES</th>
<th>83A-7</th>
<th>83A-8</th>
<th>83A-9</th>
<th>83A-10</th>
<th>TOTAL ( % )</th>
</tr>
</thead>
<tbody>
<tr>
<td>N (%)</td>
<td>25 (1.00)</td>
<td>23 (0.9)</td>
<td>2,476 (97.9)</td>
<td>5 (0.2)</td>
<td>2,529 (100.0)</td>
</tr>
<tr>
<td>FLAKED STONE</td>
<td>21</td>
<td>13</td>
<td>2,243</td>
<td>3</td>
<td>2,280 (90.2)</td>
</tr>
<tr>
<td>CERAMICS</td>
<td>1</td>
<td>10</td>
<td>189</td>
<td></td>
<td>200 (7.9)</td>
</tr>
<tr>
<td>GROUND STONE</td>
<td>1</td>
<td></td>
<td>26</td>
<td>2</td>
<td>29 (1.2)</td>
</tr>
<tr>
<td>ORNAMENTAL ARTIFACTS</td>
<td>1</td>
<td></td>
<td>17</td>
<td></td>
<td>18 (0.7)</td>
</tr>
<tr>
<td>HISTORIC ARTIFACTS</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1 (T*)</td>
</tr>
<tr>
<td>PERISHABLE ARTIFACTS</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1 (T*)</td>
</tr>
<tr>
<td>CORE SAMPLES</td>
<td>5</td>
<td>4</td>
<td>8</td>
<td>2</td>
<td>19</td>
</tr>
</tbody>
</table>

T* = Trace, less than .1%
DEVA 83A-9

DEVA 83A-9 was the largest in size, and produced the most artifacts of any site included in the project; 2,476 were collected. Included in this assemblage were flaked and ground stone, ceramics, ornamental artifacts, and historic artifacts. Eight core samples were also taken.

**Flaked Stone**

Flaked stone, by far, was the predominant artifact type recovered at DEVA 83A-9; 2,243 such artifacts were collected from the site, consisting of 2,018 flakes or flake fragments and 225 retouched pieces. With the exception of retouched pieces such as projectile points and bifaces, flaked stone has until recently been ignored in artifact analyses. This trend has changed as the value of in-depth analyses of flaked stone has come to be recognized as a means of interpreting not only the cultural and temporal aspects of a given site, but also the types of activities that were occurring there. This change in approach has been a fruitful step since flaked stone is usually abundant at most archeological sites. Rozen (1981) developed a very detailed format for flaked stone analysis that provided information about an assemblage that could be used to interpret the various steps of tool manufacture from primary (core reduction) through secondary (tool manufacture and remodification) reduction. This method of analysis has been reduced and simplified to a format much more workable for a small project such as this by the author and others (see for instance, Tagg 1983; Tagg and Huckell in prep.), while still retaining the necessary steps for a comprehensive study. Using this analysis, the flaked stone assemblage was broken down into lithic debris and retouched pieces for further analysis and discussion.

**Lithic debris** is all debitage produced during the various reduction techniques that was not further modified, and consisted of 2,018 complete and fragmentary flakes. The analysis involved recording various metric and nonmetric attributes on each artifact type, including the artifact type, size class (maximum dimension), cortex, platform type, material type, and thickness of complete flakes.
Flake Type. Complete flakes are those flakes in which the striking platform, both lateral edges, and the distal edge are intact. Flake fragments are those flakes that have lost one or more of these edges through breakage, and two types are recognized: proximal fragments still retain the striking platform but have lost a lateral or distal edge through breakage, and medial/distal fragments have lost the striking platform and possibly one or more of the remaining edges. Shatter, or those angular pieces of debris in which the interior and exterior surfaces could not be distinguished, were included in the latter category. A very low number of complete flakes were in the sample, with only 340 (16.9 percent) present. The remaining 1,622 fragments included 709 (35.1 percent) proximal fragments and 969 (48 percent) medial/distal fragments.

Flake Size. The maximum dimension was recorded on each piece of debitage using a metric size class chart, created by Bruce Huckell (in press), which is divided into a series of arbitrarily numbered nested squares drawn on metric graph paper and reproduced in Figure 41. Complete flakes and fragments were tabulated separately, but as seen in Figure 42, the overall percentages of both classes were very similar. Small flakes dominate the collection, with almost the whole collection falling less than 6 (on the size chart) in maximum dimension. As would be expected, the complete flakes tend to be larger. Thickness was recorded on whole flakes, with the measurement taken at the midpoint of the artifact, since this measurement is most often used for comparison with other collections because of its tendency for tight clustering (Ervin and Tagg in prep.). In direct relationship with the small average maximum dimension of the flakes, they also tended to be thin. The bulk of flakes were less than 6 mm thick, peaking at 2 and 3 mm (Fig. 42).

Material Type. The lithic raw material types used by the inhabitants of DEVA 83A-9 is comprised almost totally of fine-grained, regularly fracturing cryptocrystalline materials, such as chert and obsidian (Table 5). With the exception of obsidian, all the raw material is locally available in fair quantities, in either outcrop form.
Figure 41. Size class chart used for debitage measurements.

### Table 5
MATERIAL TYPES OF DEVA 83A-9 DEBITAGE

<table>
<thead>
<tr>
<th>RAW MATERIAL</th>
<th>N</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chert</td>
<td>1,505</td>
<td>74.6</td>
</tr>
<tr>
<td>Obsidian</td>
<td>396</td>
<td>19.6</td>
</tr>
<tr>
<td>Rhyolite</td>
<td>60</td>
<td>3.0</td>
</tr>
<tr>
<td>Chalcedony</td>
<td>31</td>
<td>1.5</td>
</tr>
<tr>
<td>Jasper</td>
<td>15</td>
<td>0.7</td>
</tr>
<tr>
<td>Agate</td>
<td>5</td>
<td>0.2</td>
</tr>
<tr>
<td>Quartzite</td>
<td>4</td>
<td>0.2</td>
</tr>
<tr>
<td>Basalt</td>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td>Quartz</td>
<td>1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

**TOTAL** 2,018 100.0%
Figure 42. Bar graphs illustrating debitage measurements from DEVA 83A-9.
or on the gravel fans (A. Hunt 1960:16-19). Chert, a siliceous, very fine-grained rock with a dull or wavy luster (Fenton and Fenton 1950:201-202), was the most preferred material type, making up 74.6 percent of the assemblage. A milky white chert was most common, followed by green/gray and a smokey clear chert. Jasper, which is simply chert colored a red or reddish-brown by iron oxide, was also found in small numbers.

The second most commonly used material was obsidian, a volcanic glass. Although it may be available in limited quantities in the area, it seems likely that it was brought in from the outside. The nearest reported source is near Beatty, about 20 miles to the east (Norwood et al. 1980:a2-a5). Harrington (1951) also reports that it was available from the Coso region, and small nodules could be picked up in the Bonnie Claire district just east of the Grapevines (Wallace 1977:55). The remainder of the assemblage, less than 5 percent, was made up of very small quantities of rhyolite, chalcedony, agate, quartzite, basalt, and quartz.

Cortex. The presence or absence of cortex on the exterior surface of both complete and fragmentary flakes was recorded (Table 6). These results were very similar: 91 percent (311 of 340) of the complete flakes did not exhibit cortex, and 9 percent (29) had cortex present; 89 percent of the fragments (1,500 of 1,678) lacked cortex completely, while only 11 percent (178) had cortex present.

Platform Type, Lipping, and Abrasion. Three attributes were recorded on each flake or flake fragment with a striking platform: the platform type, the presence or absence of lipping, and abrasion on the platform. Four types of platforms were recognized: cortical platforms are entirely or partially covered with cortex; plain platforms have a plain noncortical surface with no flake scars; faceted platforms have one or more flake scars running across the surface, indicating bifacial reduction; and crushed platforms are those whose type cannot be determined due to destruction during the original removal of the flake as a result of crushing or shattering (Tagg and Huckell in prep.). Plain platforms dominated the collection with 42 percent
<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>%</th>
<th>Cortex Pres.</th>
<th>Cortex Absent</th>
<th>platform type Co</th>
<th>platform type P</th>
<th>platform type F</th>
<th>platform type Cr</th>
<th>Lipping Pr</th>
<th>Lipping Ab</th>
<th>Abrasion Pr</th>
<th>Abrasion Ab</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete Flakes</td>
<td>340</td>
<td>17.0</td>
<td>29</td>
<td>311</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Proximal Fragments</td>
<td>709</td>
<td>35.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medial/Distal Fragments</td>
<td>969</td>
<td>48.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Debitage with platforms</td>
<td>1,049</td>
<td></td>
<td>29</td>
<td>442</td>
<td>326</td>
<td>252</td>
<td>268</td>
<td>781</td>
<td>34</td>
<td>1,015</td>
<td></td>
<td></td>
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<tr>
<td>Flake Fragments</td>
<td>1,678</td>
<td>178</td>
<td>1,500</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>2,018</td>
<td>100.0</td>
<td>207</td>
<td>1,811</td>
<td>29</td>
<td>442</td>
<td>326</td>
<td>252</td>
<td>268</td>
<td>781</td>
<td>34</td>
<td>1,015</td>
</tr>
</tbody>
</table>

**KEY:**  Co = Cortical
P = Plain
F = Faceted
Cr = Crushed
(442 of 1049), followed closely by 31 percent (326) faceted and 24 percent (252) crushed. Cortical platforms, as with cortex in general, is generally lacking (3 percent; 29).

**Lipping** is a protruding lip or overhang on the interior edge of the striking platform of a flake produced from the sharp angle the flake is removed by, and generally associated with soft hammer bifacial retouching of an implement. Although it is not always visible to the eye, a simple test of running a fingernail over the interior edge of the platform and detecting resistance will determine its presence. Lipping was found on 26 percent of the platforms, 268 cases in a sample of 1,049.

**Abrasion** is the rounding of the edge of a surface from which a flake is to be struck, which leaves a flattened facet on the interior of the platform. This strengthened the platform and helped prevent the platform from collapsing (Rozen 1981:164). A 10x power hand lens was used to determine if abrasion was present. Only 3 percent of the platforms (34) had abrasion on their surface.

**Retouched Pieces.** Retouched pieces are flaked stone artifacts exhibiting evidence of intentional secondary reduction, usually in a uniform fashion. The artifacts were subdivided into eight traditionally defined tool types, based on their morphology, and do not necessarily represent functional pieces. A total of 225 retouched pieces were recovered from DEVA 83A-9, representing 10 percent of the flaked stone assemblage (Table 7). Artifact definitions are based on Rozen (1981).

**Bifaces** are those retouched pieces exhibiting continuous bifacial retouch along 50 percent or more of their edges, rarely showing evidence of pressure flaking, and having no formal specializations for hafting. This artifact type may include items such as quarry blanks for exchange, preforms for manufacture of more specialized tools, and bifacial knives (Ervin 1984a). Ethnographically they were used as heavy-duty butchering, basketry, and hide-working tools (Bettinger 1977: 10). They are by far the most common artifact type in Ceramic period
Table 7
TABULATION OF RETouched PIECES BY TYPE

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Chert</th>
<th>Obsid</th>
<th>Jasper</th>
<th>Rhyolite</th>
<th>Quartzite</th>
<th>Bas</th>
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<tbody>
<tr>
<td><strong>Bifaces 109 (48.5%)</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Bifacially Retouched</td>
<td>80</td>
<td>72</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>Preforms</td>
<td>8</td>
<td>6</td>
<td>2</td>
<td></td>
<td></td>
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<td>Marginally Retouched</td>
<td>20</td>
<td>7</td>
<td>13</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Crescents</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Projectile Points 28 (12.4%)</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Pinto</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Gypsum Cave</td>
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<td>2</td>
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</tr>
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<td>Rose Spring</td>
<td>6</td>
<td>5</td>
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<tr>
<td>Cottonwood Triangular</td>
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<td>1</td>
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</tr>
<tr>
<td>Desert Side-notched</td>
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<tr>
<td>Unidentified Fragments</td>
<td>16</td>
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<td>6</td>
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<td></td>
</tr>
<tr>
<td><strong>Perforators 6 (2.7%)</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Drill</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graver</td>
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KEY:

OBSID = Obsidian
QTZITE = Quartzite
BAS = Basalt
sites in Death Valley (Wallace 1968:53). They dominate the retouched piece sample with 109 specimens, or 48.5 percent of the assemblage. Four separate types of bifaces were recognized: bifacially retouched pieces, preforms, marginally retouches pieces, and crescents.

The most common biface type is the bifacially retouched piece, representing what is considered a finished tool. They are thin, exhibiting even and overlapping flaking scars, and are lanceolate-shaped. Preforms are more crudely finished and are larger and thicker than bifacially retouched pieces. They tend to have large, unevenly spaced flake scars but are still lanceolate-shaped, probably representing unfinished bifaces. Marginally retouched pieces are those pieces which, although exhibiting bifacial retouch, do not fit morphologically into the biface category. They have unevenly spaced flake scars, usually on only one margin, and tend to be small flakes or chunks. Crescents are pressure flaked artifacts of crescentic shape, with matching plain or eccentric-shaped ends.

Table 7 illustrates the bifaces by type from DEVA 83A-9. By far the most abundant type is the bifacially retouched piece. Only one complete specimen was recovered, but the variety of fragments found, including bases (24), tips (21), and midsections (34), give a good idea of the tool type. The specimens tend to be small (fragments cluster between 1.5 to 3.5 cm in maximum dimension), thin, and finely flaked. Of the 24 bases recovered, 16 are square, and 8 are rounded (Fig. 43b, c). Chert is by far the preferred material type, with 92 percent of the bifaces made on this material type. Chert would definitely be preferred over obsidian for tools since it kept an edge much longer and was more durable than the more friable obsidian. Three fragments, including two bases and a tip, are probably from very large bifacially retouched pieces, since their maximum dimension is greater than 4.5 cm (Fig. 43d). The one complete biface appears to be unfinished, since the striking platform is still present; it is pressure-flaked and may represent an unfinished projectile point. The types of breaks observed on the pieces, both perverse (horizontal through the midsection as illustrated by Fig. 43b and c) and transverse (diagonal through the midsection as illustrated by Fig. 43d), are typical of the types of breakage that occur during soft hammer manufacture rather than from subsequent use.
Figure 43. Bifaces from DEVA 83A-9: (a) crescent, (b-c) small bifaces with perverse fractures, and (d) large biface with transverse fracture. All illustrated bifaces are chert. Maximum dimension of (d) is 7.7 cm.
The second most abundant type is the marginally retouched piece, totaling 20, or 18 percent. The retouch on these pieces is so limited that the shape of the original flake can still be distinguished, and the retouch is not continuous around the margins. Obsidian is better represented than in the bifacially retouched pieces, with a little more than half the artifacts of that material type. The obsidian artifacts show microflaking on the edges, and are basically a bifacial version of the fine flake tool to be described later in this section. Shape and size vary greatly, depending on the morphology of the original flake.

A total of eight preforms were recovered, including two complete rhyolite specimens, which range in maximum dimension from 5.8 cm to 9.9 cm. The remaining fragments are chert, and include two squared bases, two midsections, a tip, and a specimen broken vertically in half from tip to base.

One artifact was classified as a crescent because of its unusual shape. This chert artifact is missing one end, and the remaining end has two small projections or spurs protruding from either side suggesting hafting modifications (Fig. 43a). It is similar to a few of the examples illustrated by Rogers (1966:62), and would fall under the Type 3 Butterfly crescent as defined by Tadlock (1966:663-664). They are usually made of cryptocrystalline quartz, which includes chalcedony, agate, chert, flint, and jasper and are bilaterally symmetrical and bifacially pressure flaked. Crescents (sometimes termed Great Basin Transverse points) are commonly associated with Paleo-Indian groups and big game hunters, such as the San Deguito (ca. 10,000-5000 B.C.), but a few examples excavated from later Indian sites indicate their presence in more recent times (Rogers 1966:63; Mitchell et al. 1977:23). The use of crescents is problematic, but it has been suggested that they were used as scrapers, knives, and gravers based on laboratory tests of wear patterns (Butler 1970:39), transversely mounted projectile points used in hunting waterfowl, as well as hafted, long-handled knives for use in close hunting or self defense (Mitchell et al. 1977:39-41, Fig. 5; Clewlow 1968). The range of known crescent distribution is restricted to the states of California, Nevada, Utah, Idaho, Oregon and Washington, with more than half the recorded sites yielding crescents located in the
Great Basin (Tadlock 1966:64); none are known to have been recorded from sites in Death Valley at this time.

**Projectile Points** are small bifaces produced with pressure flaking, usually triangular or lanceolate in shape and with some specialization in form to facilitate hafting, such as stems or notches. The projectile points recovered represent the best temporal evidence of the occupational history of DEVA 83A-9. Only 12 of 28 points recovered were complete enough to identify, falling into five separate styles (Fig. 44).

The earliest point form recovered was a heavily reworked, split-stemmed obsidian point with slight shoulders that was identified as a **Pinto Sloping Shoulder** point (as defined by Harrington 1957). The blade of this complete specimen had been reworked and its length is only 19 mm (Fig. 44L) suggesting that it was picked up at a later date and reused. The Pinto series points seem to date about 3000 B.C. to 700 B.C. on the basis of various related radiocarbon datings (Heizer and Hester 1978:4-5), placing them in the Pinto period (5000-2000 B.C.). Although early sites are rare in the Death Valley region, isolated projectile points from this time are not uncommon. Barton (1983:55-56) found several isolated early points, and two (including another Pinto point) were recovered during the recent fence line work. Pinto points are found throughout the southwestern Great Basin. It is interesting that both Pinto points recovered on this project are obsidian, which is not uncommon for this point type. Bruce Huckell (1984:personal communication) notes the high occurrence of obsidian Pinto points from the Rosemont area in southern Arizona and the lack of it in other preceramic point styles, and suggested that the people making these points had a preference for obsidian.

One large, corner-notched point fragment with a split base was identified as an **Elko Eared** point. This chert point is missing its tip and both basal ears (Fig. 44i). The Elko series is found widely throughout the Great Basin and is particularly abundant in central and western Nevada. It has been tentatively dated from between 1500 B.C. to
Figure 44. Projectile points from DEVA 83A-9: (a) Cottonwood Triangular, (b) Desert Side-notched, (c-h) Rose Spring/Eastgate, (i) Elko Eared, (j-k) Gypsum Cave, (L) Pinto Sloping Shoulder; (a, c, L) are obsidian, (b, d, e-k) are chert; length of (f) is 3.65 cm.
A.D. 600, falling in the Elko/Gypsum phase of the Desert Archaic period, although some material recovered from Hogup Cave (Aikens 1970:51) suggest it is useless as a time marker because of its survival through a long time period (Heizer and Hester 1978:5-6).

Two medium-sized points with small contracting stems and slight barbs were identified as Gypsum Cave points. This point style corresponds with the Elko series temporally (1500 B.C.-A.D. 600), and the two types have been found together (Heizer and Hester 1928:15). Both points are chert, with tips missing, and one has a tang broken off (Fig. 44j-k). One specimen is very poorly worked, having been manufactured on a flake with little more than unifacial reduction to create the lanceolate shape. This lack of working is much more characteristic of the later points, such as the Desert Side-notched or Cottonwood series, and is very unusual for earlier styles. This might suggest that this point was manufactured at a later date, perhaps in imitation of earlier styles.

Small, corner-notched, expanding stemmed points are the most common point style at DEVA 83A-9, with six specimens recovered (Fig. 44c-h). This point series is a combination of the Rose Spring/Eastgate series, which are now generally considered to be morphologically and temporally the same (Thomas 1981:19-20; Heizer and Hester 1978:7-8). The Rose Spring designation was used here since this type has a wider geographical distribution, and in order to be consistent with other current work (Ervin 1984a). Rose Spring points are found throughout the Great Basin, and are thought to occur between A.D. 600-700 and A.D. 1100, with examples continuing into historic times. It seems likely that this point style is associated with the introduction of the bow and arrow, since they are smaller and lighter points like those used with the bow elsewhere in North American. This suggests a starting date of around A.D. 500, placing the style in the Ceramic period of Great Basin prehistory (Heizer and Hester 1978:8-10). The six Rose Spring points are all finely flaked; five are of chert, and one is of obsidian. Two are complete enough for length measurements, ranging from 3 to 3.6 cm in length, while the remaining four are missing their tips. The obsidian
point (Fig. 44c) is unusual, with a slight concavity in the base as opposed to the normal straight or convex base.

One small obsidian point was recovered with slight side notches and a concave base that falls under the General subtype of the Desert Side-notched series (see Fig. 44b). This style of arrow point is common on late prehistoric sites in the Great Basin, but is also seen in late phase sites from Mexico to the eastern United States (Baumhoff and Byrne 1958:32-33; Heizer and Hester 1978:10). Radiocarbon dates for this type indicate their appearance after A.D. 1100-1200 and persistence into historic times, with possible use by the northern Paiute Indians.

One small serrated triangular point was identified as a Cottonwood Triangular point (Fig. 44a). This obsidian arrow point is complete, with a length of 1.6 cm. Cottonwood Triangular points are common in late prehistoric and historic times, in many cases co-occurring with Desert Side-notched points. Radiocarbon dates place them anywhere from A.D. 900 to historic present (Heizer and Hester 1978:11-12). Lanning (1963:252) indicates that serrate edges occur with some frequency. A similar point was recovered from Grapevine Rockshelter (Kritzman 1979:54).

Sixteen unidentifiable point fragments were recovered including eight tips, four midsections, two bases, and two apparently unfinished items. Identification of these as point fragments, even with the absence of basal hafting features, was determined on the basis of the fine retouch and pressure flaking present in all cases. The eight tips included: three obsidian and one white chert tip, small, thin, and totally pressure-flaked, probably representing some type of arrow point such as the Desert Side-notch or Cottonwood Triangular; the remaining four tips, three chert and one basalt, are larger and exhibit some soft hammer reduction, as well as pressure flaking, and probably represent a medium-sized dart point, such as a Rose Springs series point. The four midsections were all from medium-sized points consisting of: chert (2), obsidian (1), and rhyolite (1). Finally, four base fragments could not be typed due to their poor condition:
one small finely flaked chert base has two breaks to indicate tangs, and possibly was a concave-based arrow point; an obsidian base from a medium-sized point has a stem and tang fractures, suggesting a corner-notched point style and contracting stem, and possibly a Rose Spring or Gypsum Cave point. The two unfinished products, one point of chert and one of obsidian, were probably broken during manufacture, and resemble the Cottonwood Triangular point with concave bases.

**Perforators.** Perforators are those artifacts exhibiting projections or bits produced by unifacial or bifacial retouch, and include both drills and gravers. Drills have a pronounced bit, usually produced by bifacial retouch and exhibiting uniform and overlapping flake scars. Four drills were recovered, three of chert and one of obsidian (Fig. 45c-d). Two chert drills, including one nearly complete tool and a bit fragment, had bifacially produced projections. The remaining chert drill as well as the obsidian tool, both relatively complete, had only unifacial retouch on the bits. The bases of the three relatively complete specimens were not shaped, retaining the natural shape of the original flake. Drills with expanding bases are more common in the Rose Spring phase than the early Shoshonean period (Kritzman 1979:54). Gravers are those pieces in which a small natural projection has been slightly modified and isolated with minimal unifacial retouch. Three obsidian gravers were recovered, made on flakes, with the projection modified by microflaking. All three are relatively complete, and are comparable in size to the drills.

**Scrapers.** Scrapers are unifacially retouched pieces which have a series of flakes removed from a flat surface, usually the interior of a flake, to create a fairly steep edge angle and working edge. Five scrapers were in the sample, including two complete items and three fragments. The two complete pieces, both chert, are ovoid scrapers with retouch along the entire margin of the tool (Fig. 45e-f). The remaining three scrapers, two chert and one obsidian, are too fragmentary to determine their type. They all have retouch on one margin. Scrapers such as these are most commonly found on preceramic sites in this region (C. Hunt 1975:160-161).
Figure 45. Retouched pieces from DEVA 83A-9: (a) fine flake uniface, (b) spokeshave, (c-d) drills, (e-f) scrapers; (a, c) are obsidian, (b, d-f) are chert; length of (e) is 5.65 cm.
Spokeshaves. Spokeshaves are unifacially retouched pieces with a series of small flakes removed to create a concavity on one margin of the tool. Five spokeshaves were recovered, four flakes of chert and one flake of rhyolite. All but one are fragmentary, with the complete implement a rhyolite flake (Fig. 45b).

Unifaces. This constitutes a broad category that includes all pieces exhibiting both uniform and irregular unifacial retouch which do not fit into a previously described artifact type, and also includes fragments too small to be classified. Artifacts in this category have been classified as scrapers by many researchers, but were thought to be morphologically different by this author (Wallace and Taylor 1959:5, Fig. 2; Ervin 1984a). Three different types were distinguished by the kind of retouch present: single edge, double edge, and fine flake. Single edge unifaces are those pieces exhibiting a single edge of retouch. The retouch is usually uniform, and the flake scars are probably produced by soft hammer percussion. A total of 19 single edge unifaces were identified, with three complete pieces on flakes; the remaining 14 are fragmentary. It is possible that the fragmentary pieces were initially scrapers or other unifacial tools which are now too small to classify, and this artifact type may include flakes tested for material suitability. Chert (11), obsidian (7), and rhyolite (1) are present. Double edge unifaces have retouch on two margins of the piece. Two were recovered, one each of obsidian and rhyolite. Both are whole flakes that have been retouched on two continuous edges.

The most numerous type recovered are Fine Flake unifaces with a single edge. They are small flakes (less than 3 cm in maximum diameter) that exhibit continuous flaking (that is, flakes less than 1 mm in size) along one edge. The small size of the retouch and flakes themselves suggests that this retouch may be produced by use of the piece for cutting or sawing purposes rather than by intentional pressure flaking (Fig. 45a). Richard Ervin (1984b:personal communication), in his studies of obsidian from Yosemite National Park, produced similar edges by running a flake with a fresh edge over an object such as wood, and proposes that this may have been done intentionally to produce a steeper edge angle for use. Ken Rozen (1984:personal communication) observed
that an unmodified flake edge would be more useful than a retouched edge in this case, and suggested that these worked edges may have been created as backings of tools, or that they represent abuse not related to cultural use, such as trampling. A total of 35 fine flake unifaces were in the sample. Similar amounts of obsidian (15) and chert (20) were used, and 10 pieces were complete. A total of eight fine flake unifaces, all obsidian, had retouch along two edges. This retouch varied from continuous edges to opposing edges. Two of these tools were complete specimens.

One large rhyolite flake was also placed in the uniface category although it did not exhibit any retouch. Instead, one edge of the flake was smoothed and flat and exhibited striations running perpendicular to it, apparently from some type of back and forth abrasion. It is possible the tool was used as an abrader for the manufacture of other implements or ornaments.

**Knives.** This artifact type comprises large flat flakes or tabular pieces of lithic material that have one or more unifacial or bifacially flaked edges, with uniform and overlapping flake scars. They are large enough to fit comfortably in one hand and are sometimes called flake knives or tabular knives. One knife fragment was found, made on a large rhyolite flake. It is unifacially retouched on the only remaining edge.

**Cores.** Cores are pieces of lithic material that have had flakes removed from them for secondary purposes, and exhibit negative bulbs of percussion. Four cores were recovered, including one large rhyolite core and three smaller nodules, two chert and one obsidian. The rhyolite core has a maximum dimension of 9.7 cm and weighs 440 grams, while the obsidian nodules range between 2.9 and 4 cm in maximum dimension and 17-22 grams in weight. One of the chert nodules is best considered a tested nodule, rather than a core. There is evidence of single-, bi-, and multi-directional flake removal.

**Hammerstones.** Hammerstones are pieces of lithic material, usually in cobble form, that exhibit battering on one or more margins
from use as hammers to remove flakes from cores or other battering tasks. Two hammerstone fragments were recovered: one chert fragment is a complete flake from what was probably a core hammerstone, and the second is half of a chert cobble. Both have moderately battered margins.

Discussion. The flaked stone assemblage from DEVA 83A-9 is characterized by a high percentage of flake fragments (83 percent) and a low percentage of complete flakes (17 percent). Fine-grained, easily flakeable materials were used almost exclusively, and are available in the locality. The flakes tend to be small and thin with very little cortex, if any; most pieces have no cortex at all. Plain (42 percent), faceted (31 percent), and crushed (24 percent) platforms are common, and there is a high percentage of lipping (26 percent) and a low percentage of abrasion (3 percent). Retouched pieces represent 10 percent of the assemblage, and are characterized by a very high percentage of broken bifaces (48 percent), unifaces (29 percent), and projectile points (12 percent), and low percentages of cores (2 percent) and hammerstones (1 percent).

These characteristics of the flaked stone assemblage suggest that secondary reduction (especially tool manufacture) was the principal task occurring at the site. Secondary reduction is characterized by a high frequency of flake fragments, and a low frequency of complete flakes, cores, retouched pieces and hammerstones; small, thin flakes with very little cortex (the thickness bar graph for complete flakes from DEVA 83A-9 compares to Group II sites in Rozen [1981:185]); and a high frequency of lipping and faceted platforms (suggesting soft hammer percussion and bifacial retouch [Rozen 1981:206]). The retouched pieces and raw material types provide further evidence for this interpretation.

Small bifaces (including projectile points) dominate the collection, constituting 60 percent of the retouched pieces from the site, and coarse-textured materials are low (Rozen 1981:206). Of the bifaces, most exhibit perverse or transverse fractures indicative of breakage during manufacture rather than use, and the general lack of remodeled tools would indicate that raw material was not scarce (Rozen 1981:164). Fine-textured raw materials such as chert and obsidian dominate the assemblage, being much more suitable for soft
hammer reduction and pressure flaking. The physical properties of this material, in part, also largely determine the properties of the debitage, since flakes of fine-grained materials tend to be smaller and less cortical than those of coarse-textured materials because of the relative size of the original piece of raw material (Rozen 1981:164; Ervin and Tagg in prep.). Therefore, platform type and the presence or absence of cortex seem to be the best indicator of reduction type since they would not be affected by material type (Rozen 1984:personal communication). The almost total lack of cores and hammerstones at the sites suggests that very little primary reduction (flake production) was occurring.

The high percentages of points and bifaces are common for seasonal Shoshone sites, such as DEVA 83A-9. The Saratoga Springs site in Death Valley proper produced large quantities of bifacial tools, and work in the Upper Reese River Valley in central Nevada produced many similar collections from sites in the Pinyon ecotone (Wallace and Taylor 1959; Thomas and Bettinger 1976). This type of assemblage is also characteristic of hunter/gatherer cultures, such as the preceramic groups in southern Arizona (Huckell, in press); there is a heavy reliance on points and knives for this type of subsistence.

The 12 identifiable projectile points recovered represent the only good indicators of the temporal use of the site. They reveal a long utilization of the site, ranging from 3000 B.C. to present. The small number of earlier point styles (one Pinto, one Elko, and two Gypsum Cave points), as well as the heavy reworking on the Pinto point, might suggest that these artifacts were collected and reused by later occupants of the sites rather than demonstrating early habitation. The most common points are the smaller arrow points, including the Rose Spring, Desert Side-notched, and Cottonwood Triangular points, which fall post-A.D. 600 and are associated with the introduction of ceramics in the Great Basin.

Ceramics

A total of 139 sherds were recovered from DEVA 83A-9, with all but two being plainwares that can be termed Paiute/Shoshone utility wares, a catchall designation assigned to locally made plainware ceramics. This
type includes or is synonymous with Owens Valley Brownware (Riddell 1951), Shoshone pottery (Steward 1941), and Southern Paiute pottery (Baldwin 1950) (Madsen 1975:82-83). The remaining two sherds were whitewares associated with the Anasazi in northern Arizona, who are known to have had influence in this region. No whole vessels were recovered, and rim sherds gave the only indications of vessel forms. Only 10 sherds were not identified as to type because of their deteriorated state, including one small piece still exhibiting coils, but were all variants of Paiute/Shoshone Utility Ware (Table 8).

**Table 8**
DEVA 83A-9 CERAMICS BY TYPE

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Paiute/Shoshone Utility Wares. This pottery type was manufactured by Paiute/Shoshone groups, and the distribution of these variants follow known ethnographic distributions. Southern Paiute pottery is found throughout southern Nevada, southwestern Utah, and southeast/central California. Owens Valley Brownware centers around the Owens Valley, east/central California, and extends into Death Valley and central Nevada. Shoshonean pottery is found throughout most of the rest of the Great Basin to the north and east of those other areas (Madsen
Plainwares made of residual clays from weathering granitic rocks all exhibit almost identical culturally significant traits (such as rim styles, smoothing techniques, and temper), making them difficult to categorize and diagnostically useless (Waters 1978:43-48). Therefore, since typology and developmental schemes of very similar brownware types vary with individual researchers and regions, no attempt was made to place the recovered sherds into any specific type. Paiute/Shoshone Utility Ware includes all the brownwares recovered at DEVA 83A-9, with three subtypes distinguished mainly by surface morphology and thickness.

The pottery is constructed by coiling, with either paddle-and-anvil rough smoothing (although the presence of this technique in this region has been questioned [Baldwin 1950:53-59]) or thinning by scraping. Colors range from reddish-brown to dark brown, to black or gray in reduced areas. The temper is very fine to large rounded quartz or feldspar sand with occasional iron pyrites, and it is fired in an often uncontrolled oxidized atmosphere. Wide mouthed bowls and jars with either flat or pointed bases are most common (Riddell 1951:20-31; Baldwin 1950:53-54).

Type I. Type I consists of sherds that exhibit heavy horizontal striations on the interior of the vessel, with exteriors usually rough-smoothed to obliterate the striations, although they still occur occasionally running vertically (Fig. 46a). Interiors are usually gray or black, while exteriors tend to be various shades of brown. Vessel thickness is very uniform at 0.6 cm. Five rim sherds of this type were recovered, all from bowls, and have squared lips and exhibit fingernail impressions in a single line along the lip. They seem to be from relatively straight-walled vessels. The conspicuous wipe marks and fingernail impressions are similar to those seen on Owens Valley Brownware (Riddell 1951:20-21) and Southern Paiute Utility Ware (Baldwin 1950:53-54), and the wipe marks, which are sometimes added after the smoothing process, characterize Tizon Wiped (Euler and Dobys 1958). Fingernail impressions are also seen on Shoshone pottery (Steward 1941:242). A total of 58 sherds of this type were recovered, constituting 31 percent of the ceramic sample. Sherds of this type were found in
Figure 46. Ceramic types recovered: Paiute/Shoshone Utility Ware, (a) Type I, (b) Type II, (c) Type III; Sosi Black-on-white (d).
both sherd concentrations. One of the sherds from Sherd Concentration #1 had a faint line of ochre or perhaps paint on it. Steward (1941:242) noted that painting is rare, but a fugitive red may have been used on pots after firing, as on baskets.

**Type II.** Type II is similar to Type I, but lacks the heavy striations. These sherds are partially smoothed on the exterior and interior walls, although interiors tend to be rougher, with faint indications of coils still visible over the entire surface (Fig. 46b). Vessels are not as thick as Type I, ranging from 0.4 to 0.55 cm. The exterior color is almost always tan to reddish-brown, and interiors are usually gray to black. Eleven rim sherds were recovered, nine from straight-walled bowls, one from a jar, and one too small to identify. Lips tend to be narrower and more rounded than those of Type I sherds, and no fingernail indentations are seen. The jar sherd is from a relatively straight-necked jar with a wide mouth. One of the sherds has a small repair hole near the lip. This type fits descriptions of both Southern Paiute Utility Ware and Owens Valley Brown. It is the most predominate pottery type at the site with 88 sherds recovered (47 percent). Both sherd concentrations include this type, making up most of Sherd Concentration #1 (possibly one vessel). Three of these sherds have ochre or paint on them.

**Type III.** Type III is a very crudely finished, thick brownware distinct from both previous types. The surfaces of the sherd are extremely rough and pitted, occasionally exhibiting irregularly spaced striations, and appearing not to have been smoothed beyond obliterating the coils (Fig. 46c). Exterior and interior color is usually light gray to black, with some reddish-brown to dark brown exteriors seen, and appears very crumbly. Vessel thickness ranges from 0.7 to 0.9 cm. Seven rims were recovered, with the four that could identified from straight-walled bowls. The lips are roughly flattened. One rim has what appears to be a repair hole just below the lip, although it does not seem to appear close enough to a fracture to have been used for that purpose. It may be a type of decoration. A piece of a flat base was also recovered. It is 1.5 cm thick with walls flaring
out at a slight angle. This type does not fit well into any of the descriptions of recognized types, although sherds of this thickness are included in both Owens Valley Brown and Southern Paiute Utility Ware. Wallace (1968:18) mentions some sherds from the Ubehebe Crater area that were coarser and heavier than the typical sherds, which may be this same type. A total of 31 sherds of this type were recovered, 16 percent of the sample.

Intrusives. Two intrusive sherds were recovered from DEVA 83A-9, both associated with the Virgin Branch Anasazi from northern Arizona. Permanent Anasazi settlements were present in the Muddy/Virgin River area of southeastern Nevada, and although they were a sedentary people, there is widespread evidence of intermittent forays into southwestern Nevada and adjacent California in the early Ceramic period (i.e., Basketmaker II, Pueblo I and II periods; A.D. 500-A.D. 1100) (Crabtree and Warren 1979:22; A. Hunt 1960:113). Much of this evidence is the occurrence of their pottery in small numbers at sites in the Great Basin (for instance, Wallace and Taylor 1959:8). It is likely that the sherds are from pots that contained other trade goods from the east.

Tusayan White Ware: Sosi Black-on-white. One of the sherds was identified as Sosi Black-on-white, a Tusayan White Ware. It is a rim sherd from a bowl with black interior decoration on a white slipped surface. The exterior is also white slipped and has an incised band 0.3 cm below the lip and some striations from scraping (Fig. 46d). The interior decoration consists of two thick (0.4-0.5 cm) horizontal lines 0.4 cm below the lip and 0.8 cm apart. It is 0.5 cm thick. Sosi Black-on-white is constructed by coiling with paddle-and-anvil smoothing. It is fired in a reducing atmosphere and has light-dark gray cores and pure sand temper. The color is usually bluish-white or pearl gray, covered by a white slip that is usually moderately polished, especially on the decorated surface. Scraping marks are sometimes visible. Horizontal black stripes make up the major part of the upper design with other design elements not uncommon also. Bowl interiors are usually covered with decoration, with the exterior left unpainted. Sosi
Black-on-white is most commonly found in northeastern Arizona, and is a service type of the late Marsh Paso Focus and early Klethla Focus of the Kayenta Branch Anasazi. Dates for this type range from about A.D. 1070 to A.D. 1150 (Colton 1955). What appears to be a Sosi Black-on-white sherd, very similar to this specimen, was recovered on a Rose Spring/Eastgate phase site at Saratoga Springs in southern Death Valley (Wallace and Taylor 1959:8).

Tusayan White Ware: Type Unknown. The second sherd is an undecorated body sherd with a white slip on the interior surface, suggesting that it is from a bowl. The lack of decoration makes specific identification impossible, although it is possible that it is from the same vessel as the Sosi Black-on-white sherd. Construction techniques are the same as for the Sosi sherd. Tusayan Whitewares are found all over northern Arizona from Little Colorado River north to the San Juan River, and west from Chinlee Creek to the Colorado and Little Colorado rivers. It is a service ware of the Kayenta Branch Anasazi and runs from about A.D. 700 to A.D. 1350 (Colton 1955).

Discussion. Ninety-eight percent of the pottery from DEVA 83A-9 is the pottery type typical for the area and is commonly found in collections from sites throughout the monument. It is commonly referred to as Owens Valley Brownware. It was locally made by the Shoshone Indians, with its origin thought to be from the north, although the ware does not specifically relate to any prehistoric or modern wares of the Southwest or Great Basin (Steward 1941:242). Paiute/Shoshone Utility Ware, although known by different type names, occurs throughout the Great Basin. It is rarely decorated and has been dated by its association with Anasazi ceramics to about A.D. 1000 to post-A.D. 1900, making it useful only as a broad cultural horizon marker, and indicating late prehistoric occupation of the site. The various subtypes named in this report are thought to be contemporaneous, representing variations of the same main type. The occurrence of the Tusayan Whiteware sherds not only indicate contact with the Anasazi, but also serves as a better temporal marker for the site, suggesting an occupation of around A.D. 1050-1150 or later, placing it well in the Shoshonean period.
Ground Stone

A total of 26 pieces of ground stone were collected from DEVA 83A-9 including 18 metates, 6 handstones, and 2 abrading stones (Table 9). As with the flaked stone analysis, a number of metric and nonmetric attributes were recorded on each piece. These artifacts were used by the inhabitants of the site to process plant foods. Locally available material was used for the manufacture of these artifacts with a dominance of volcanic (igneous) materials, such as rhyolite (5), granodiorite (5), volcanic tuff (5), rhyolitic porphyry (3), basalt (1), and rhyolitic tuff (2). The remaining pieces were either quartzite (3) or sandstone (2).

Metates. Metates are the stationary implement in the grinding tool combination, with three types recognized. Basin metates are those with an oval basin worn into one side of a boulder, created by the circular grinding motion of a handstone (Tagg in prep.). They are associated with the processing of nonagricultural foods, and are common in Death Valley (A. Hunt 1960).

Flat metates are large thick boulders with a flat use area covering most, or all, of one surface of the artifact. It is possible that this type represents the incipient stage of a basin metate (Tagg and Huckell in prep.). Slab metates are those thin, tabular metates with flat use wear on one or both surfaces.

Basin metates are the most common type, with five fragments and two complete specimens. The two complete metates are very similar, made on rhyolitic porphyry boulders, ranging in size from 43 to 44 cm long by 36.5-37 cm wide by 10-20 cm thick (Fig. 47a-b). One of the metates has a fire-blackened surface, and was found inverted beside a handstone; the second was found with the use surface up. Metates were sometimes inverted after use by southwestern Indians, propped up on handstones, to keep the surface clean. The remaining basin metates are fragmentary. Two fragments, one of rhyolite and one of rhyolitic tuff, are from smaller metates that, when complete, were half the size of the intact specimens. Both have light wear, and were found along with a handstone in a 2 m² area. One granodiorite fragment, a small piece from a large metate, is from the middle of a well-worn metate with
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<th>N</th>
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<th>VOLCANIC TUFF</th>
<th>RHYOLITIC PORPHYRY</th>
<th>BASALT</th>
<th>RHYOLITIC TUFF</th>
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Figure 47. Metates: (a-b) basin metates from DEVA 83A-9, (c) slab metate from DEVA 83A-7; (a-b) are rhyolitic porphyry, (c) is rhyolite.
a basin 2.5 cm deep. The remaining two fragments, both volcanic tuff, are small pieces with only enough of the basin remaining for identification.

A total of two flat metates were recovered, one complete granodiorite specimen and one rhyolite fragment, both with incipient wear. The complete metate is on a large boulder, 48 cm long by 29 cm wide by 17 cm thick. The grinding slicks, not included in the ground stone total since they are nonportable, would both fall under this category.

One small fragment from a rhyolite slab metate was collected. It can be distinguished from the flat metates since it is only 1.9 cm thick. Figure 47c illustrates this style of metate. The remaining eight metate fragments are all unidentifiable, representing small pieces of use area from larger metates. Three granodiorite fragments may be from the same metate.

Handstones. Handstones (or one-handed manos) are usually naturally round or oval river cobbles with little or no intentional shaping, that fit comfortably in one hand and are used with the metate in the grinding process (Tagg and Huckell in prep.). A total of six handstones were collected from DEVA 83A-9, five complete and one fragmentary specimen (Fig. 48). Three handstones were quartzite cobbles, and the remaining three were basalt, volcanic tuff, and rhyolitic tuff. Five of the six handstones, including the fragment, are oval-shaped cobbles, ranging in size from 10.8 to 12.5 cm long, 7.8-9.5 cm wide, and 3.5-4.7 cm thick (Fig. 48a-b). All of the oval handstones have bifacial wear, and four have had edge grinding, presumably for shaping purposes. The irregular handstone, a volcanic tuff cobble, has unifacial wear with no further alterations of the cobble and is 12.2 cm long by 9.8 cm wide by 7.5 cm thick (Fig. 48c). This handstone was found with one of the complete basin metate described earlier. One of the quartzite handstones was found with two basin metate fragments, also mentioned earlier, and the basalt handstone was found in Feature 3, a possible hearth.

Abraders. Abraders are objects of a naturally abrasive raw material that have been used like sandpaper to grind or shape small objects of bone, shell, or stone. Two artifacts, both sandstone, were
Figure 48. Handstones from DEVA 83A-9: (a-b) are oval and shaped, (c) is irregular and unshaped; (a) is basalt, (b) is quartzite, and (c) is volcanic tuff.
classified as abraders. One is a small tabular piece, 6.3 cm by 3.3 cm by 0.6 cm in size, with no definite wear patterns, but similar to artifacts that have been classified as tabular abraders (Tagg in prep.) and flat abraders (Kritzman 1979:73). The second artifact is the end fragment of a more oblong object with rounded edges that has two narrow (0.3 mm), linear grooves on one side, and one groove on the opposite side similar to the small subtype defined by Kritzman (1979:72). The grooves would suggest that the artifact was used to grind narrow objects, such as shell or slate ornaments. Abraders have been found at other sites in the monument, varying in size and shape, with preference seemingly more on material type than shape (Wallace 1979:30; Kritzman 1966:20).

Discussion. The recovery of the ground stone from DEVA 83A-9 is evidence of the processing of plant foods by the inhabitants. The amount of ground stone, as well as the extent of wear on some of the metates, also suggest that the site was used for an extended period of time. Ground stone becomes more common in the Pinto period (5000-500 B.C.), when subsistence patterns are thought to have changed (see Prehistory section). Both flat basin and slab metates are common in Death Valley, associated with the late Desert Archaic and Ceramic period occupations (i.e., circa 2000 B.C.-ethnographic present), ranging in size from small and portable to large boulders (A. Hunt 1960:246-254). Basin metates are the most common, and are the typical metate type found in hunter/gatherer cultures. Handstones typically associated with the basin metate are said to first appear also in the Elko/Gypsum period, with oval or rectilinear quartzite handstones most common. The bifacially utilized specimens supposedly were better shaped than those used unifacially (A. Hunt 1960:255). Shaped handstones seem more common in the Ceramic period. Because of the long time span of ground stone technique in prehistory, with relatively little morphological change, it is useless as a time marker.

Ornamental Artifacts
A total of 17 artifacts were classified as nonutilitarian ornaments, including 14 pieces of worked stone, one shell, one glass bead, and a quartz crystal (Table 10).
Table 10
ORNAMENTAL ARTIFACTS

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</table>

Worked Stone. Two types of worked stone, slate and pyrophyllite, were recovered from DEVA 83A-9, probably representing pendants or other types of jewelry either broken during manufacture or unfinished, as suggested by whole specimens recovered from other sites in the region (Wallace 1977; A. Hunt 1960). No complete specimens were recovered.

Pyrophyllite is an aluminum silicate material similar to talc-containing materials (such as talc, soapstone, and steatite) in most of its physical characteristics (U.S. Department of the Interior 1980:849-902). It ranges in color from almost pure white to a purple and white, and is a relatively soft mineral with soap-like texture. It is common in California, and is currently mined commercially in Death Valley. Its general morphology makes it attractive for use since it is soft and thus easily worked. Eight worked pieces of pyrophyllite were in the assemblage, and all stages of manufacture seem to be represented (Fig. 49a-c). One unmodified piece was observed at the site but was not collected, and two worked pieces still retain one cortical surface and have unmodified edges, with only one surface heavily striated from abrasion (Fig. 49a). Three pieces have both surfaces heavily striated, and at least two edges ground, with one piece partially worked into a triangular shape (Fig. 49b). Only one of these five preforms is broken, supporting the unfinished product interpretation. The final three
Figure 49. Ornamental artifacts: (a-c) pyrophyllite pendants in three stages of manufacture, (d) worked slate, (e) hexagonal blue glass bead, and (f) Glycymeris sp. shell fragment.
specimens appear to represent the finished product broken during the final stages of manufacture or during use. Both surfaces and all remaining edges have been ground, and the pieces are uniformly thin (2-3 mm versus 4-6 mm on unfinished pieces) and well-shaped (Fig. 49c). They appear to have been either oval or rectilinear in shape. One was found in Sherd Concentration #2. The artifacts range in size from 2.4 to 4 cm in maximum dimension. Pyrophyllite has not been identified from previously investigated sites in Death Valley; it is assumed here that it is present but has been classified as talc or steatite by other authors.

Slate is a hard, dense, and very fine-grained rock that fractures in very thin plates that cut across bedding planes. It is a moderately metamorphosed shale, and is not uncommon in California in Jurassic aged deposits (Fenton and Fenton 1950:309). Six pieces of slate were recovered, four modified and two unmodified pieces. The unmodified pieces were small fragments, which may represent unfinished products. The four modified pieces have striations from abrasion on both surfaces and all remaining edges. Three are fragmentary: one is a small (3.5 cm maximum dimension) rectilinear piece that probably represents the base of a pendant; the second one is a small piece from a larger object (4.6 cm), which was round or oval in its entirety and may have been a disk; and the third is the midsection of what appears to have been an oval or rectilinear pendant, with a hole drilled through one end. The fourth specimen is complete, but appears to have been reworked or is unfinished. It is roughly rectilinear, 5.8 cm by 3.5 cm by 0.2 cm in shape, and has a concavity along the edge of one end that probably represents a hole drilled in the initial object, which has been reground due to breakage (Fig. 49d). Slate pendants are commonly found along with those of other materials. Wallace (1979:32) suggests that stone pendants first appeared around A.D. 500, becoming more popular from that time on, although Crabtree and Warren (1979:21) suggests an earlier appearance; such artifacts were found at Elko/Gypsum period sites (2000 B.C.-A.D. 500). Kritzman (1979:75) illustrates complete specimens of white serpentine, gypsum, and schist which are generally elongated oval shapes with a hole drilled in the top. Most of the pendant shapes
are asymmetrical in outline with little refinement. They tend to be crude in execution and no preconceived design is readily apparent.

**Shell.** One unmodified fragment of a *Glycymeris* sp. shell was recovered. It is small, 2.1 cm in maximum dimension, and very smooth from either beach tumbling or from weathering (Fig. 49f). This species could either be from the California coast, or from the Gulf of California/Sea of Cortez (Alan Ferg 1984: personal communication). The shell fragment is an example of an item brought in from the outside. Very little is known about trade patterns of the Panamint Shoshone, but they were known to receive shell beads from the Eastern Mono in return for salt (Norwood et al. 1980:a-1). Temporally, shell artifacts are most commonly found along with stone pendants, from A.D. 500 on (Crabtree and Warren 1979:22; A. Hunt 1960:269-270); however, no shell of this species is known to have been recorded at any Death Valley site.

**Glass.** One badly fragmented, blue glass bead was located on DEVA 83A-9. The fragments are from a small, hexagonal-shaped bead, approximately 0.4 cm in size, similar to the one illustrated in Figure 49e. Beads of this type were produced from long glass tubes of various colored glass, which was blown very long and thin, then cut into smaller cylinders (Woodward 1965:8). Beads like the one recovered from the site are one of the more common forms found in Death Valley. They are the same as Kritzman's (1979:119-121) Type 3 bead which were thought to be imported from Bohemia during the middle of the 19th century. They are also reported to be of Italian origin, made near Venice, and brought into this region from the north, either from the northern plains area or northern California (A. Hunt 1960:285-287). Four similar beads were found at Grapevine Rockshelter no. 2 still strung in a double tier fashion so that a break in the string would not result in the loss of a bead (Kritzman 1979:119-121). While their main use was probably as ornaments, strings of beads were also used as money, and beads reached the Beatty area through trade in pre-Euro-American times from Indians to the south (Steward 1938:45). A. Hunt also states that the hexagonal, transparent, dark blue beads usually occur with metal and other postcontact artifacts, as well as small arrow points and ceramics. This

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would place them post-A.D. 1500, when the Spanish first explored the southern California deserts.

Crystal. One unmodified quartz crystal was included in this category since it probably represents an object picked up by an inhabitant of the site as a keepsake or for ceremonial use. The crystal is hexagonal and opaque, 1.7 cm long, and has two smaller crystals attached naturally to it. Quartz crystals are not uncommon at sites in central and southern California, but are reported to be rare in the Great Basin (Meighan 1953:51-52). They have been recovered from most of the rockshelters excavated in the monument, and were thought to be employed as ornaments, fetishes, and charms (Kritzman 1979:101).

Discussion. Ornaments, pendants, and beads of slate, shell, and glass have been recovered from sites throughout Death Valley National Monument. From their relationship with other temporally diagnostic artifacts it seems most likely that they were present in the Ceramic period (ca. A.D. 500-ethnographic present). The recovery of various stages of manufacture of the stone pendants indicates that they were being produced on the site along with other tool making tasks. The occurrence of shell and glass beads suggest trade and contact with both west coast Indian groups and Euro-Americans.

Historical Artifacts

A total of three historical Euro-American artifacts were observed on the site; only one of these was collected. Those artifacts not collected were a 5-gallon metal bucket and a metal pie pan with holes punched in the base for gold panning. The artifact collected was a Lea and Perrins Worcestershire sauce bottle. It is a light green, two-piece mold bottle with a club sauce shape, a club sauce finish, and an applied lip (Herskovitz 1978:4-5). The bottle is 17.8 cm tall with a base width of 5.2 cm, and bears the J D S basemark of John Duncan and Sons of New York, New York, in operation from 1877 to 1920. This particular trademark was used from 1880 to 1900. Duncan was the first American licensee for importing Lea and Perrins sauce into America from England, where it was made and the bottles filled. In 1920, the company was sold
to the originators of the sauce, and the trademark was discontinued. A number nine in the trademark represents a serial number of the mold that made the bottle (Toulouse 1971:277).

These historic artifacts were probably associated with the various mines and glory holes present in the vicinity of the site, and suggest a late 19th century/early 20th century slate. This would place it temporally with the Bullfrog boom ca. 1904.

Faunal Analysis

Thirty-eight fragments of bone were recovered from DEVA 83A-9. Only five could be positively identified because of the poor condition of the bone: four rabbit bones and one woodrat bone. Nine bones were identified only to the animal size, including seven from large animals (probably deer or bighorn) and two from small animals, and eight tooth fragments were identified as from artiodactyles or perissodactyles. The only evidence of cultural use of the bone is that six fragments were burned, indicating cooking of the specimen or disposal of meal refuse in the fire. There is no indication of past environmental change since all of the identified animals live in the area today. Ethnographic accounts of the Panamint Shoshone indicate that the inhabitants of the region utilized all of the taxa identified (see Appendix A).

Soil Samples

Eight soil samples were taken at DEVA 83A-9 with a 3-inch diameter soil auger from five nonrandomly placed localities in the main site area (see Fig. 34). This included two samples from each of three localities, and one sample each from the remaining localities. The samples were taken to determine the depth of the cultural midden on the site, and also to provide flotation samples for archaeobotanical analysis. The auger holes indicated that the depth of the midden ranged from 20 to 30 cm from the current ground surface to an underlying sterile substrate. A total of six of the eight soil samples were processed, and the resultant plant remains were examined for evidence of cultural use. The samples proved to contain only modern plant litter deposited on the site by natural means (see Appendix B).
Artifact Distribution

Using the raw counts of all artifacts recovered from the 2 m by 2 m collection units, a contour map of artifact density was constructed for DEVA 83A-9 (Fig. 50). There is no question that some of the artifact distribution is due to erosional patterns of the site, and artifact displacement has occurred. However, some of the dense areas may constitute high use areas, consistent with their location. Not surprisingly, the main body of the site, indicated by the apparent deep midden area, has most of the concentrated areas of artifacts. The flat area of the saddle also has small concentrations. What is interesting is that both habitation features (Fea. 1 and Fea. 2) are in the light scatter area, but have more dense scatters, mainly of flaked stone, directly outside and downslope of the open and cleared area of the feature. This would suggest that the occupants were making or repairing tools in front of their structures. It also suggests that the other small, but dense, concentrations of artifacts in the central site area might be the location of other habitation structures with no visible remains since amorphous scatters of cobbles were noted in that area. Finally, the most dense concentration of artifacts, consisting mainly of flaked stone, occurs southwest of Feature 1, coming off of the flattest portion of the saddle. It seems possible that this is a reduction station or extramural work area, considering the large amount of flaked stone in a small area. Thomas and Bettinger (1976:301) did an artifact density map from the Mateo Ridge Site in the Reese River Valley and came up with distinct flaked stone concentrations. They also interpreted these as likely tool manufacture areas, with work conducted away from living areas. This would apply to the dense scatter at DEVA 83A-9, which is on the saddle away from what is considered the main habitation area below.

DEVA 83A-7

A total of 25 artifacts were recovered from DEVA 83A-7, including flaked stone, ground stone, ornamental objects, ceramics, and perishables. The majority of these artifacts were found on the talus
Image removed from the electronic edition in an effort to protect sensitive cultural resources.

Figure 50. DEVA 83A-9 artifact density contour map.
slope dropping off from the shelter. Table 4 provides a tabulation of the artifacts.

**Flaked Stone**

Flaked stone dominated the DEVA 83A-7 assemblage with 21 artifacts recovered, including 6 retouched pieces and 15 pieces of debitage (Table 11). Only six artifacts were found in the shelter itself; included were two flakes, a biface, and a uniface. Fifteen of the artifacts were chert, and three each were of obsidian and rhyolite. The debitage consisted of five complete flakes, eight medial/distal fragments, and two proximal fragments. The flakes are generally small, falling within the range seen from DEVA 83A-9, between 2 and 6 on the size chart. Cortex is generally absent with only four pieces exhibiting any. Platform types vary, including two cortical, two faceted, two crushed, and one plain. Three platforms have lipping present.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>CHERT</th>
<th>OBSIDIAN</th>
<th>RHYOLITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biface</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scraper</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spokeshave</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uniface</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete Flake</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Flake Fragment</td>
<td>10</td>
<td>8</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>21</td>
<td>15</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

The retouched pieces include two bifaces, two unifaces, a scraper, and a spokeshave. The bifaces, a bifacially retouched piece and a preform, are both base fragments. The bifacially retouched piece is well-flaked and thinned and may be a fragment of a projectile point, with a slightly concave and squared base, but it has been burned beyond recognition. The preform is very poorly flaked, probably in the initial stages of reduction. The two unifaces include a single edge chert uniface and an obsidian double edge fine flake tool. Both have been
produced on flakes, and both are fragmentary. The scraper, made on an obsidian flake, is also fragmentary; it is a side scraper, and has a crushed and microflaked edge suggestive of use. The spokeshave exhibits a small concavity on the edge of a chert flake fragment.

Ground Stone

One slab metate with incipient wear was recovered from the present floor of the shelter in what would appear to be its place of use. It is made on a tabular rhyolite slab, with dimensions of 44 cm long by 34 cm wide by 3.5 cm thick (see Fig. 47c).

Ceramics

One sherd, located by Barton (1983:36) on the talus slope and described as a rim sherd of Paiute/Shoshone Utility Ware, was not relocated during the collection of artifacts. The sherd is included in this report since it was the only temporal indicator recovered from this site, suggesting a post-A.D. 1200 date for the occupancy of the shelter.

Ornamental Artifacts

One piece of worked pyrophyllite was recovered on the talus slope. It appears to be a pendant fragment in a near complete stage of manufacture, with both faces and all edges ground to an oval shape. It has a maximum dimension of 3.3 cm and is 0.5 cm thick.

Perishable Artifacts

A fragment from a sandal was recovered beside the metate in the shelter (see Figs. 27 and 28). The sandal, missing the heel portion, was constructed of juniper bark and yucca leaves. It was analyzed by Lisa Huckell; the results appear in Appendix B.

Soil Samples

Five soil samples were taken from inside the shelter at DEVA 83A-7 (see Fig. 27), indicating a depth of 10 cm to sterile substrate. One sample was analyzed and the remaining four were inspected for further fiber remains. A small length of loosely twisted juniper bark
was recovered, but cultural use of the recovered uncarbonized plant remains could not be determined (see Appendix B).

**DEVA 83A-8**

A total of 23 artifacts were recovered from DEVA 83A-8, consisting of ceramics (10) and flaked stone (13). Table 12 illustrates the artifacts by type.

### Table 12
**DEVA 83A-8 ARTIFACTS BY TYPE**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>CHERT</th>
<th>N</th>
<th>RIM SHERD</th>
<th>BODY SHERD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flaked Stone</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biface</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Uniface</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Debitage</td>
<td>11</td>
<td>11</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>13</td>
<td>13</td>
<td>10</td>
<td>1</td>
<td>9</td>
</tr>
</tbody>
</table>

**Flaked Stone**

The flaked stone assemblage is composed of two retouched pieces, three flakes, and eight flake fragments, all of chert. The debitage is characterized by medium-sized pieces ranging from 3 to 6 on the size chart, with a general absence of cortex. There are four faceted platforms, the most common type, and one each of plain and crushed platforms. Lipping is present on only one of the platforms. The two retouched pieces include a preform tip and a broken fine flake tool. The preform tip is very crudely flaked, and exhibits a transverse fracture, which probably occurred during manufacture. The fine flake piece has one entire edge of microflaking on a distal flake fragment.

Ten of the 13 flaked stone artifacts, including both retouched pieces, are a gray/green chert and are probably from the same core. Nine of these pieces, plus a white chert flake, are in an approximately 4 m² area at the east base of the rock outcrop, which juts out into the site. The occurrence of the crude preform and flakes of similar material
suggest a single knapping event which, given the presence of the preform fragment, was unsuccessful. A maroon-colored chert flake was found in Feature 1.

Ceramics

All 10 sherds recovered were identified as Paiute/Shoshone Utility Ware. All three types recognized were present in this sample, including Type I (3), Type II (6), and Type III (1) (see Table 12). One Type II bowl rim sherd was included in that number. It was initially suggested that these sherds may have represented a single potbreak since all but one were located on the west side of the rock outcrop in a relatively concentrated area, but the occurrence of the three different types precludes this.

Soil Samples

A total of four soil samples were taken from one locality in Feature 1 at DEVA 83A-8, striking a sterile substrate at 40 cm below the surface. The recovered soil was a sterile reddish-orange silt, and there was no evidence of subsurface cultural material. Two samples were analyzed, and the recovered plant remains were thought to be of noncultural origin (see Appendix B).

DEVA 83A-10

The artifact assemblage from DEVA 83A-10 is the smallest in the project, with only five artifacts recovered. This includes three pieces of flaked stone and two pieces of ground stone (see Table 4).

Flaked Stone

The three flaked stone artifacts include two obsidian projectile points and a complete chert flake. The two points, both found inside the small shelter beside a recent rodent disturbance, are Cottonwood Triangular points (A.D. 900-historic present). The first point is small (1.5 cm maximum diameter), slightly serrated, and triangular-shaped, with a slight concave base. The second is larger (2.5 cm maximum diameter) and wider, and is also somewhat triangular, with a deeper
concave base. Both points have missing tips, a typical result of snap fractures that occur during pressure flaking reduction of the object (Fig. 51e-f). The flake, found at the base of the talus slope in front of the shelter, is noncortical with a plain platform and a maximum dimension of 6 cm.

Ground Stone

One metate and a metate fragment were recovered on the talus slope just below the shelter. Both metates are of the flat variety, exhibiting light wear, and are made on quartzite boulders. The complete specimen has dimensions of 54 cm long by 29 cm wide by 20 cm thick, with the use surface sloping from a thick end to a thinner end. The location of this metate directly in front of the shelter might suggest that it is in its place of use. The metate fragment was partially buried in the talus further downslope.

Soil Samples

Two soil samples were collected from DEVA 83A-10, both of which were analyzed. Thirty centimeters of silt fill is in the small shelter; the recovered plant remains were thought to be naturally deposited (see Appendix B).

BLM 1

Four diagnostic artifacts were collected from each of the two BLM sites in an attempt to place them temporally. Three projectile points and a glass bead were collected from BLM 1. Two chert points were identified as Rose Spring style (Fig. 51h-i). The third point, a small obsidian arrow point, could not be positively identified because of its battered condition. It appears to be corner-notched with an extending and squared base, suggesting either Rose Spring or Desert Side-notched. All the points are fragmentary. The glass bead is the same type found at DEVA 83A-9. It is made of blue glass and is hexagonal-shaped (see Fig. 49e). The projectile points and glass bead would place the site in the Ceramic period, circa A.D. 500 to ethnographic contact.
Figure 51. Projectile points from the small sites and isolated artifacts: (a-d) are from BLM 2 with (a) a possible Rose Spring point and (b-d) Desert Side-notched, (e-f) are Cottonwood Triangular points from DEVA 83A-10, (g) is an isolated Pinto Sloping Shoulder point, and (h-i) are Rose Spring points from BLM 1; (a, c, e-g) are obsidian, (b, d, h-i) are chert; length of (g) is 4.2 cm.
BLM 2

A total of four projectile points were collected from BLM 2. Three of the points, two of obsidian and one chert, were small Desert Side-notched (Fig. 51b-d). Only two of the points are complete. One of the obsidian points is finely flaked bifacially, while the remaining two were made on small flakes with very little attention given to the interior surface of the flake. One of the obsidian points has been reworked so that its tip is almost drill-like. All three points are basal as well as side-notched. This style of Desert Side-notched point falls under the Sierra subtype as defined by Baumhauf and Byrne (1959: 38; Plate 1) with the notched bases and well-defined, squared tangs. This style is characteristic of the high Sierra region, but is not uncommon in the Great Basin. The fourth point recovered, also obsidian, is a basal fragment of a larger corner-notched arrow point (Fig. 51a). Stylistically, it is similar to the Elko Corner-notched point, but its small size indicates that it is probably a Rose Spring point. The base has been partially reworked. The Desert Side-notched points place BLM 2 in the Shoshonean period (post-A.D. 1200), with the possible Rose Spring point tentatively placing the site as early as A.D. 500.

Isolated Artifacts

Two isolated obsidian projectile points were recovered in the process of the artifact collections from the fence line sites. The first point was located on a low ridge approximately 1.6 km due north of DEVA 83A-10. The point was identified as a Pinto Sloping Shoulder type, temporally placed about 3000-700 B.C. The point is almost complete, missing a portion of one tang and damaged on one side (Fig. 51g). The second point was located a little less than 0.8 km southwest of DEVA 83A-9, on a very steep slope down from a high ridge. Because of the poor condition of the fragment, it could be identified only as a medium-sized corner-notched variety, possibly an Elko series point. Both points probably represent hunting losses.
Chapter 6
INTERPRETATIONS

The investigation of the four sites in the foothills of the Grapevine Mountains was the first archeological research on sites in this environment in Death Valley National Monument. The results of the work indicated that two separate types of sites were represented in the sample. The first, including DEVA 83A-9 and the two BLM sites, are the large, heavily utilized base camps. The second type, including the remaining sites, represent short-term, limited activity sites. The information gained during the investigation of the sites, as well as the analysis of the recovered artifacts, is presented below.

Large Base Camps

DEVA 83A-9. DEVA 83A-9 is by far the largest site investigated, both in area and amount of artifacts recovered. It represents the only site located near a permanent water source and produced artifacts that suggest long-term use of the site. Located in the foothills of the Grapevine Mountains, on a saddle on a pinyon-covered ridge extending into the valley, it provides easy access to Willow Spring only 0.5 km away, and access to the pinyon/juniper community that begins to flourish less than 1 km to the west. The greatest part of the site lies on a relatively flat portion of the ridge, with the saddle providing some protection from southerly winds. The quantity and density of artifacts indicate heavy use of the site, with over 2,000 artifacts recovered from a 64 m by 56 m area, including flaked stone, ceramics, and ground stone.

The analysis of the artifacts indicated that extensive secondary reduction of flaked stone had occurred at the site, including both tool manufacture and tool modification. The large number of bifaces and projectile points recovered indicate the hunting and gathering activities of the inhabitants of the site. Bifaces were the most numerous retouched pieces recovered, and the number of these with fractures commonly associated with breakage during manufacture fits well with the information derived from an analysis of the debitage. The projectile points are of great value as time markers, and those
recovered from DEVA 83A-9 suggest a long-range occupation of the site, perhaps as much as 7,000 years (Table 13).

Table 13
DEVA 83A-9 POSSIBLE TIME OF OCCUPATION

<table>
<thead>
<tr>
<th>CULTURAL PHASE</th>
<th>TIME RANGE</th>
<th>NUMBER OF POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pinto Period</td>
<td>5000 - 2000 B.C.</td>
<td>1</td>
</tr>
<tr>
<td>Elko/Gypsum Period</td>
<td>2000 B.C. - A.D. 5000</td>
<td>3</td>
</tr>
<tr>
<td>Rose Spring/Eastgate Period</td>
<td>A.D. 500 - 1200</td>
<td>6</td>
</tr>
<tr>
<td>Shoshonean Period</td>
<td>A.D. 1200 - Euro-American Contact</td>
<td>2</td>
</tr>
</tbody>
</table>

Also of value as time markers are the ceramics recovered from the site. The local brownware, Paiute/Shoshone Utility Ware, is present only in the Shoshonean period, while the single intrusive Anasazi sherd falls earlier in the Rose Spring/Eastgate period at the height of Anasazi influence on the area. Other artifacts not generally considered good temporal indicators but associated with this period are the pyrophyllite and slate pendants (also with various stages of manufacture recovered), and the shell fragment. Finally, the blue glass bead is unquestioned proof of post-contact occupation of the site. The shell, Anasazi sherd, and glass bead also indicate trade with cultures on the California coasts, as well as in northern Arizona.

Ground stone is not mentioned above because it has remained virtually unchanged through time, making it of no value as a cultural or temporal marker. But the quantity of ground stone recovered, as well as the many well-worn pieces, are also evidence of extended use of the site, as well as illustrating the utilization of local plant foods.

The features at DEVA 83A-9 are typical of seasonally occupied sites in desert regions. Features 1 and 2 seem to represent the foundations of windbreaks, or perhaps brush wickiups common with the Shoshone. A variant of the normal Shoshone wickiup was the lean-to. Elliptical in outline, a lean-to had a framework of poles laid against a ridgepole supported in the crotches of two upright posts, and was covered with
arrowweeed, tule or brush (Wallace 1977:44). Shelters were only established for the duration of the nutting, and Dutcher (1893:377) describes some in a pinyon camp as "... five or six small circles each seeming to accommodate one family. In diameter they measured 8 or 10 feet, and their walls consisted merely of the broken pinyon branches and of small bushes that grew around, piled up into a loose row 2 or 3 feet thick and as many high. ..." He also mentioned entryways, and passages between two adjacent shelters, and suggested their uses as "securing a little privacy for the occupants; to serve as a slight windbreak during the night when the family slept inside, and during the day to serve as a rack in holding out of the dirt the blankets, extra clothes, cooking utensils, and other paraphernalia of the household. In the center... was... the fire. ... The floor was smooth, clear of stones and weeds, and carpeted by a thick layer of fine, gray dust" (Dutcher 1893:377-378). Sanchez (1973) describes several wickiups found near Hunter Mountain as being constructed of trees, brush, boulders, and bailing wire and indicated that it was difficult to distinguish the shelters from the shrubs used in their construction. One small conical shelter incorporated a down-bending branch of a pinyon tree in its frame. Figure 21 illustrates typical Panamint Shoshone wickiups. Both windbreaks at DEVA 83A-9, with their associated cleared spaces, protect from a southwesterly wind similar to the saddle in its protection of the site area. Artifact densities on the site strongly indicate that much of the daily activities at the site, such as tool making and manufacture, were occurring in the shelter of the structures, although extramural work areas may also have been present.

Features 3 and 4 probably represent hearths, which would be expected at a site such as this. They may have been used in association with other structures, or in extramural work areas. This would also hold true for the bedrock grinding slicks and whole metates recovered at the site. One of the grinding slicks is possibly associated with the Feature 2 structure, but the second slick is located out of the main site area, with no evidence of a structure nearby. Nor is there obvious evidence of structures near the whole metates, which are assumed to be in their areas of use since heavy ground stone would not be moved by
erosion and other natural events. This might also suggest extramural work areas.

DEVA 83A-9 appears to be one of three similar sites located so as to utilize Willow Spring. All three sites are located on the saddles of ridges, and show evidence of having been occupied during the same time periods, although artifactual evidence from BLM 1 and BLM 2 indicates only a later occupation, starting in the Rose Springs/Eastgate period and continuing into historic times. This suggests a heavier occupation of the area in the Ceramic period; an increased population during the later time periods requiring more living areas for more family groups, or perhaps one family group expanding into separate family groups through time. It may also represent a time when the Beatty Shoshone came to gather pine nuts. Although Steward (1938) does not place either a winter village or pine nut camp in this area in his report on the region, he observes that when the Belted Range pine nut crop was bad, the Beatty Shoshone went instead to the Grapevine Mountains to harvest. They would occasionally attend a fall festival during the pine nut season given by the Death Valley people at Willow Spring on the eastern side of the Grapevines, which lasted five days. At this time they often participated in rabbit drives in the Sarcobatus Flats (Steward 1938: 96-97).

Finally, there is no evidence of the use of DEVA 83A-9 by a large group of people. The two habitation features, and indications of perhaps two or three others by amorphous cobble scatters and dense artifact scatters, would indicate a small group of inhabitants. It seems likely that the site represents the long-term, intermittent use of an attractive camping spot by small groups of people rather than the remains of a more extensive camp for a large group of people.

DEVA 83A-9 and the BLM sites fit well into Thomas and Bettinger's (1976) pinyon ecotone sites, defined from work in the Reese River Valley in central Nevada, conducted to evaluate how Steward's (1938) historic Shoshonean cultural ecology applied to prehistoric settlements. Their study revealed that preferred winter village site locations of the prehistoric inhabitants of the Great Basin were flat areas on long ridges extending into valleys, or saddles between pinyon-covered hills with relatively easy access to both the pinyon/juniper community and
water -- but a discrete distance away in order to hunt animals using the spring (Thomas and Bettinger 1976:271). The placement of sites consistently on the margins of the sagebrush-grass/pinyon-juniper woodland ecotone was interpreted as providing the inhabitants access to the resources of both of the major communities, since hunter/gatherers are known to seldom restrict their subsistence activities to the immediate vicinity of their settlements, but rather use the settlements as base camps to exploit large tracts of surrounding territories (Thomas and Bettinger 1976:270). Steward (1938:232) also indicates that several plant and animal species occurred in such great quantities in certain localities during short periods that they drew families to the area, and were often the major factor in the location of winter villages.

Thomas (1973:173) suggested that about five families lived on each ridgetop, and there might be several such ridgetops within a 1-mile radius. The Indians gathered and stored seeds and nuts in the mountains and wintered nearby, going to the nearest locality that offered an abundant crop and sufficient timber for houses and fuel (Steward 1938: 20-28).

The artifacts from DEVA 83A-9 also fit the pattern of the pinyon ecotone sites, with debitage abundant and bifaces representing the most dominant artifact type, with lesser amounts of points, drills, unifacial tools, ground stone, and ceramics and also the occurrence of Euro-American artifacts such as glass trade beads and cans. Another trait common to the sites is long-range occupation, as indicated by recovered projectile points. All of the point styles recovered from DEVA 83A-9 were also recovered from the Reese River sites (Thomas and Bettinger 1976:280-297).

It is interesting to note, in view of the general lack of similar sites investigated in the mountain regions, that sites such as these also occur in Death Valley. Wallace and Taylor (1959) excavated a preceramic site at Saratoga Springs in southern Death Valley that had all the characteristics of the pinyon ecotone sites, with the exception of location on a ridge extending into a valley (although it was on a saddle between knolls) and access to pinyon/juniper ecotone. This would suggest that these settlement patterns may occur in other ecotone systems also.
In summary, DEVA 83A-9 represents a seasonally occupied base camp situated to exploit various environmental zones. Occupied by a small group of people, the site was utilized throughout much of the prehistoric period of Death Valley.

Small Limited Use Sites

DEVA 83A-7. DEVA 83A-7 is the largest of the limited use sites, but has all the indications of being occupied only for a short period of time. Located in a limestone outcrop with southeast exposure, the rockshelter is large enough to accommodate only a few people, perhaps one family group. The artifact assemblage suggests a limited use of the shelter not only by its general sparsity (only 25 items were recovered), but also by the incipient use of the metate. There is no evidence of structures in the shelter; the brush wall does not give the impression of permanent architecture, nor is there any evidence of depth in the unconsolidated fill of the shelter.

It appears that the brush wall was constructed to divide the main living area from a shallow portion of the shelter, which may have been used as a storage room or sleeping area. All evidence of habitation use is seen in the main portion of the shelter, including the heavily smoke-blackened roof, the dense concentration of fire-cracked rock, the metate, and a few scattered artifacts. The two concentrations of small fire-cracked rocks indicate hearth areas; the main one seems to be in the western portion of the shelter. The density of the scatter suggests small hearths. The metate also indicates that plant foods were being processed.

The only indication of the temporal placement of the shelter is the one sherd found on the talus slope before it. This sherd places the site in the Shoshonean period, suggesting a late prehistoric occupation of the site.

The location of this limited use site in the pinyon/juniper community suggests that it was associated with pinyon nut harvesting. Shelters such as this were common camping spots for the Shoshone, who used the caves for shelter, storage, and burying the dead (Wallace 1979:2). Steward (1938:86-88) reports that the Grapevine Mountains were used by all of the villages in northern Death Valley, including Grapevine.
Springs, Surveyors Well, and Mesquite Springs, and occasionally by inhabitants of Furnace Creek and lower Death Valley when the heat and absence of food drove them from their villages. Families habitually gathered from the same tracts, storing those nuts which could not be carried down to the village. The Indians preferred collecting from areas close to their villages, and DEVA 83A-7 is only approximately 25 km (15 miles) from Grapevine Springs. It seems possible that this shelter was used by Death Valley inhabitants while collecting the pine nuts.

DEVA 83A-7 is similar to other rockshelters excavated at lower elevations in the Death Valley region, especially the Coville Rockshelter (Meighan 1953) and Grapevine Canyon Rockshelter No. 2 (Kritzman 1979). Both of these shelters were about the same size and shape as DEVA 83A-7, long and relatively shallow, probably utilized by a small number of people. The shelters all were occupied in the Ceramic period also, with ceramics and small arrow points present. The Grapevine Shelter was thought to be occupied intermittently during thousands of years, as indicated by the recovered artifacts; the rock-lined rooms built into the shelter suggested preparation of the shelter for longer or repeated use. The nearby spring made it an ideal camping spot (Kritzman 1979:124). The Coville Rockshelter on the other hand, although similar in size, did not have the well-defined rooms or high artifact density and was thought to have been occupied for only a brief period (Meighan 1953:60-61). Scattered cobbles in two sections of that shelter indicate structures similar to the brush type seen on open sites.

It seems apparent from the conclusions derived from work at other rockshelters in the area, that shelters were favorite camping spots for local inhabitants, and were probably occupied by one or two small family groups at a time in their quest for food. The Grapevine Shelter appears to have been more heavily used than other shelters; its location near permanent water makes it more attractive. The remaining shelters were probably occupied also since they provided shelter from the elements, and little preparation or effort was needed to camp there. The lack of well-built rooms, as seen in the Grapevine 2 Rockshelter, and the distance from water suggest that shelters such as DEVA 83A-7 and the
Coville Rockshelter were utilized only for very short periods, and for specific tasks such as pinyon nut hunting.

DEVA 83A-8 is also a small, limited use site, but is atypical in that it is not located in a rockshelter. As with DEVA 83A-7, this site has very few artifacts and no evidence of more than a single use of the area. Located in the pinyon/juniper zone, it was also probably a camp for pinyon nut harvesting. The presence of the site by the large bedrock prominence protruding into the narrow drainage would suggest that the location was chosen to take advantage of the shelter provided by the outcrop. Feature 1, representing a possible structure, also takes advantage of the flat face of the outcrop, using it for a back wall. The feature is very similar to one illustrated by A. Hunt (1960:125), which was constructed with larger rocks, but also used the face of a cliff as a back wall. The structure was excavated, and contained a rock-filled hearth in the center of the rock outline. Hunt also recorded other structures built against cliffs consisting of large well-made walls with over 100 rocks, to smaller, less permanent types (A. Hunt 1960:128-136). Feature 1 probably represents an impermanent wickiup-type structure for very limited use, that accommodated only a few people. The concentration of sherds on the west side of the outcrop may indicate a potbreak; however, all three types of pottery were included in the scatter. The pottery is the only temporal indicator at the site, suggesting use in the Shoshone period. The flaked stone scatter on the east side of the shelter, with the broken biface and flakes of the same gray/green chert, suggests a single knapping event. The occurrence of flakes of other chert indicates more material was present. Both concentrations may be special activity areas used by the inhabitants.

In summary, DEVA 83A-8 seems to represent a very short-term use (probably one-time use) of a naturally sheltered area as a campsite. It is likely that the site was occupied by only one or two people exploiting the pinyon in the area. Sites such as these have not been investigated or reported in Death Valley, but it seems probable that small open-air campsites such as DEVA 83A-8 are common.
DEVA 83A-10 represents a very small rockshelter in a south-facing bedrock outcrop. Of the four sites investigated in the project, this one is at the lowest elevation, well within the sagebrush ecotone and a fair distance from the pinyon/juniper community. The small size of the shelter would make it useful for only one person, as illustrated in Figure 37. Moderate soot on the shelter roof and small pieces of charcoal in the fill indicates use of the shelter for habitation, but the lightness of the soot also indicates very short-term use, as does the paucity of artifacts recovered. The two metates indicate plant processing; both have incipient use wear. The recovery of the two projectile points, with tips broken during manufacture, suggests tool modification since only one piece of chipping debris was present. They also indicate hunting activities, and place the site in the Shoshone period.

DEVA 83A-10 would appear to represent a very short-term campsite used by one individual who was probably in the area hunting or gathering. Men from Beatty would often spend a month on the eastern slopes of the Grapevine Mountains hunting mountain sheep, drying the meat to facilitate transporting it home (Steward 1938:96). An observation by Fremont of the local inhabitants fits this site well, "Sometimes one man cooking by his solitary fire in the sagebrush that was his home, his bows and arrows and a bunch of squirrels by his side..." (Steward 1938:8). There are no indications that the site was used more than once.

No shelters this small are included in the excavations of rockshelters in the region although small shelters such as this are common in Death Valley. Many such shelters, exhibiting fire-blackened roofs but no artifacts, were recorded by Meighan (1951) in the Stovepipe Wells and Wildrose Canyon areas. Some of these were later investigated, and it was concluded that the sparsity of artifacts and small size of the shelter suggested short-term use by one or two people (Baumhoff 1951). Two shelters almost twice the size of DEVA 83A-10, the Old Crump Flat Rockshelter (Wallace 1979) and Grapevine Canyon Rockshelter No. 1 (Kritzman 1966), provided a look at shelters that could be occupied by only a few people, as opposed to the larger ones mentioned such as DEVA 83A-7. These shelters yielded a fair amount of artifacts, indicating
heavier use than DEVA 83A-10, but represented natural shelters used with no obvious modifications such as walls. These two shelters were also occupied during the Shoshonean period, and were at lower elevations, probably corresponding to a larger version of DEVA 83A-10.

Summary
The investigations of the four sites on the Boundary Fencing Project revealed evidence of Shoshone settlement and environmental exploitation patterns. Two distinct site types were recognized: the large summer/winter base camps and the small limited-use sites. The base camps, or pinyon ecotone sites, are represented by DEVA 83A-9 and the two BLM sites located near Willow Spring. There was a preference for locating these sites on naturally flat areas sheltered somewhat from the wind by saddles or low ridges. They are situated on the boundary of the sage and pinyon/juniper ecological zones so that a wide range of resources could be exploited within the radius of a mile or so while still maintaining access to a steady water supply and the game that went with it. The sites, containing four or five family groups, were villages where all activities associated with everyday living were done: collection, preparation, and cooking of food; making tools and jewelry; and perhaps pottery making. Shelter consisted of wickiups and lean-tos since the climate did not create a need for sturdy and more permanent dwellings. When the climate became severe or the resources dwindled, the inhabitants would move down to their villages in the valleys below. It seems probable that these villages were occupied for periods of 6 months or more, although the duration of the settlement was dependent on the availability of the local pinyon crop. The village could be established only if the immediate crop was successful (Thomas 1973:173). The favorability of these sites is indicated by their continued use, perhaps by the same groups, through more than 5,000 years of prehistory. Steward's (1938) proposed Shoshone settlement patterns, validated by work in the Reese River Valley (Thomas and Bettinger 1976) is also supported by findings on these base camps near Willow Spring, and the pattern seems relatively unchanged throughout the prehistory of the area.
The limited activity sites, including DEVA 83A-7, 8, and 10, represent campsites of from one person to perhaps one family exploiting a specific resource in the immediate site area and using the camp only for the time needed to finish the job. There is a preference for naturally sheltered areas, such as rockshelters or large bedrock prominances, which needed little work to serve to protect the inhabitants. The time and effort of collecting material and building structures, which could be better spent on the tasks they came to do, was thus eliminated. Activity at these sites was limited to the collection and preparation of food needed to sustain the inhabitants during their stay, and the remodification of tools broken in use, or occasionally making a new tool to replace one broken or lost. Most of the material culture brought into the sites was taken away when the inhabitants left the area, with the exception of discarded tools and clothing or ground stone too heavy to carry. DEVA 83A-7 is the only limited activity site which has indications of a more long-term, or perhaps seasonal, use over a longer period of time. The remaining sites represent sites used only once or a few times by a very limited number of people. DEVA 83A-7 and 8 would be associated with the pinyon nut harvesting in the fall of the year, as are most sites at this elevation. The 53 sites recorded by Wallace (1957:14) were all associated with pine nut harvesting. DEVA 83A-10 may have been the random campsite of someone on route to another place, or it may have been used by someone hunting the numerous rodent (or larger game) associated with the sage flats. Joshua trees are a feature of this locality, and it is possible that DEVA 83A-10 was made use of by someone taking advantage of this plant resource. It is possible too that a permanent water source existed in the small box canyon at one time.

Both site types played an important part in the Shoshone subsistence pattern. The large base camps represent strategically placed villages within easy access of the various resources needed to survive, while the limited use sites represent individuals who probably traveled a long distance from larger villages in northern Death Valley or other low elevation sites with a task specific intent, returning to the village when the task was accomplished.
All the sites investigated were occupied during the Shoshonean period of Death Valley prehistory, circa A.D. 1200 to ethnographic present, as indicated by the recovery of ceramics and/or diagnostic projectile points from all of the sites. This period represents a time period in which the Death Valley region seems to have had its greatest use by prehistoric people, and sites from this period and the preceding Rose Spring/Eastgate period are the most common in Death Valley. This remains constant with the sites recorded by Wallace in the eastern Grapevines near Strozzi Ranch, south of the project area. The sites were all in well-watered places in the pinyon/juniper woodland zone, and were all Shoshonean period sites (Wallace 1957:5). The fact that of the three sites located around Willow Spring, DEVA 83A-9 alone has evidence of long-term occupation, while the two BLM sites seem to have evidence only of Shoshonean period use, support the view that there was heavier use of the region in this later time. The only evidence of earlier occupation is seen on DEVA 83A-9, which has diagnostic artifacts, both projectile points and an intrusive sherd, suggesting occupation during the Rose Spring/Eastgate period, through the preceding Elko and Gypsum Cave period, and perhaps as early as the Pinto period, covering a 7,000-year span. The evidence of the use of the region as early as the Pinto period, consists only of isolated projectile points that probably represent hunting losses. Sites this early in time are rare in Death Valley National Monument.

In general, the work done on the Boundary Fencing Project has provided an understanding of some higher elevation sites in a region where most work has been done in the valley proper, and provides a more complete picture of the use of Death Valley National Monument by its prehistoric inhabitants.

Recommendations and Future Management Planning

The Boundary Fencing Project was initiated to prevent the possible indirect disturbance of four archeological sites in line with, or near, the proposed path of a fence line which will keep feral burros and range cattle out of Death Valley National Monument. All surface artifacts were collected from each site and clearance was provided for the construction of the fence line, since posts were to be hand-driven and
wire would be hand-strung, producing minimal ground disturbance to the sites. Further archeological importance remains at each of the sites: excavations at rockshelter sites such as DEVA 83A-7 and 10 have produced large numbers of significant artifacts; core samples from DEVA 83A-9 suggest depth of the cultural midden in the main portion of the site; and no other high elevation pinyon ecotone sites have been investigated to date in the monument. The structure at DEVA 83A-8 is similar to others excavated in Death Valley proper, which produced significant artifacts. The surface collection of artifacts on the sites prevented immediate disturbance from the present fence line work, but if future work or easier access to the area provides potential for further disturbance of these sites, additional measures should be taken to prevent the loss from archeological records of the additional information remaining at these sites.
Part 5

Conclusions
Chapter 7
CONCLUSIONS

This report contains information on two distinct archeological projects carried out by the same field crew in March 1984. The fieldwork provided an opportunity to investigate two environmental zones within the monument and to compare and contrast prehistoric sites within them. The Panamint Shoshone are known to have practiced a seasonal round of migrations in the Death Valley region of the western Great Basin. In the winter, spring, and early summer they lived within Death Valley itself, among the mesquite-covered dunes near the saltpan or in the low-lying valleys of the nearby mountains. As many as nine villages were historically known in the Death Valley region, each centered around a permanent water source. When the weather became unbearable in the valley, or when the pinyon nuts ripened in the fall, the Indians moved to camps in the higher elevations where cooler weather and natural resources were available.

Both cycles of this seasonal round are represented by the sites investigated in the two projects in this report. DEVA 84A-3 and DEVA 83A-9 are base camps or villages in the two separate environmental zones, and are vastly different. DEVA 84A-3 is a portion of a winter village located below sea level on a gravel fan near three major springs in Death Valley. Since no artifacts were recovered, the occupational or temporal span of the site is unknown, but a Rose Spring/Eastgate or Shoshonean period date has been suggested from work on similar sites in the valley. The large number of features recorded suggests a long-term use of the area, which is supported by ethnographic studies. The site, including 33 rock cairns (thought to be burials), and 9 rock circles (probable structures), illustrates adaptation to the gravel fans, with extensive utilization of the locally available cobbles. Each cairn contains from 50 to 200 or 300 cobbles each, and the rock circles have well-formed cobble foundations encircling them. The site also covers a very large area, more than 356,000 m², since the entire area is relatively flat and thus suitable for the purposes of the inhabitants. The lack of artifacts is puzzling, and perhaps can be explained as the result of a specialized function of the portion of the site that
remains; it was suggested above that the area may have served as a burial ground or ceremonial area. Other sites in the valley, such as those at Tule Springs and Bennett's Well, are also similar to DEVA 84A-3 in most aspects.

In contrast is DEVA 83A-9, a base camp at an elevation of 6,200 feet in the Grapevine Mountains and representing a summer/winter village. The temporal span of the site is well-documented by the presence of diagnostic artifacts, and other artifacts are numerous. This site illustrates an adaptation to the extremely variable nature of the low ridges and valleys present in the foothills of mountain ranges. The site is extremely compact, covering the available flat area of 3,584 m². It was probably occupied by up to five families, which is thought to be about normal for the lower villages too (see Coville 1893).

The BLM sites may represent areas utilized when DEVA 83A-9 could not accommodate all the people living near the spring during the Shoshonean period, or perhaps when inhabitants of the Beatty area traveled here. Very few features were recorded at DEVA 83A-9, and those that were did not contain abundant rocks. The lack of the cobbles so abundant on the gravel is evident in the lack of rock features on this site. Many features most likely existed that left no remains, such as wickiups without rock-lined bases, and burials or cremations without extensive rock cairns.

The extensive long-term use of DEVA 83A-9 suggests that burials and more structures probably do exist, although no definite evidence was found. Unmarked burials have been found in Death Valley, such as an interment in a bell-shaped pit near Saratoga Springs (Wallace and Taylor 1959:9-10). The abundant artifacts on the site also indicate a reliance on locally available lithic materials for tools and ornaments, such as chert for flaked stone tools, coarse-grained volcanic materials for ground stone, and pyrophyllite and slate for pendants. Nonlocal material such as obsidian, glass beads, sea shells and Anasazi ceramics indicate some trading was being done with people to the west and possibly to the east.

In both cases, the sites show the continual seasonal exploitation of permanent water sources and favorable environmental zones by local
Indian groups capable of survival on resources locally available within their seasonal round territory. All the sites investigated have good potential for further archeological work, since little is known of the content of sites like DEVA 84A-3 in the valley, and no work has been done on high elevation sites, such as DEVA 83A-7, 8, 9, and 10.

Current ethnographic work with the Timba-Sha Shoshone Indians living at DEVA 83A-2, whose ancestors were the local Panamint Shoshone, has already been done and a report is in preparation (Crespi in prep.). Further research could be done on the identification of the graves in the local cemetery (DEVA 84A-4). The potential also exists that DEVA 77-43, the isolated burial, can provide further knowledge of Indian burial practices.

In general, the small amount of archeological work carried out in Death Valley National Monument leaves a vast quantity of further research possibilities in advancing the knowledge of past and present aboriginal inhabitants of the region.
Appendix A

FAUNAL MATERIAL FROM DEVA 83A-9

by

Keith D. Weaver
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FAUNAL MATERIAL FROM DEVA 83A-9

by

Keith D. Weaver

This report describes faunal material recovered by surface collection from DEVA 83A-9, an archeological site in the northeastern section of Death Valley National Monument. A total of 36 pieces of bone was recovered from the site (Table 14).

Identified Bone Elements

Only four bone fragments were identifiable to the genus level. Rabbits (Sylvilagus sp.) are represented by one humerus, one tibia, and one mandible fragment. A single maxilla fragment represents woodrat (Neatoma sp.). One additional element, a pelvis fragment of a lagamorph, was identifiable to the family Leporidae. It may represent either a rabbit or a hare. Eight tooth fragments represent either Artiodactyles or Perissodactyles. All of the elements described above were bleached and fragile.

Unidentified Bone Elements

A number of unidentified bone fragments were also recovered. These consist of seven fragments representing large animals. Of these five are burnt, and two are unburned. Two bones representing small mammals, one pelvis fragment and one mandible fragments, were too badly damaged to allow more exact identification. These elements were heavily bleached. In addition, 10 bones were too fragmentary to allow any identification. Of these one was burnt, and nine were bleached.

Discussion

The small size of the current sample prevents any but the most basic analysis. It is possible to state only that at least one rabbit and one woodrat are represented at DEVA 83A-9.

No signs of cultural modification of bone other than burning were observed.
Table 14
FAUNAL MATERIAL FROM DEVA 83A-9

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>MANDIBLE</th>
<th>TOOTH</th>
<th>HUMERUS</th>
<th>PELVIS</th>
<th>TIBIA</th>
<th>MAXILLA</th>
<th>TOTAL</th>
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<td>Sylvilagus sp.</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
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<tr>
<td>Neatoma sp.</td>
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<td>1</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Artiodactyle or</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Perissodactyle</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td>7</td>
</tr>
<tr>
<td>Lagamorph</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
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</tr>
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<td></td>
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</tr>
<tr>
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<td>1</td>
<td></td>
<td></td>
<td></td>
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<td>2</td>
</tr>
<tr>
<td>Unidentified</td>
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<td></td>
<td>15</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
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<td><strong>7</strong></td>
<td><strong>1</strong></td>
<td><strong>2</strong></td>
<td><strong>1</strong></td>
<td><strong>1</strong></td>
<td><strong>22</strong></td>
</tr>
</tbody>
</table>

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Appendix B
PLANT REMAINS FROM THE BOUNDARY FENCING SITES, DEATH VALLEY NATIONAL MONUMENT, CALIFORNIA

by

Lisa W. Huckell
Appendix B
PLANT REMAINS FROM THE BOUNDARY FENCING SITES,
DEATH VALLEY NATIONAL MONUMENT, CALIFORNIA
by
Lisa W. Huckell

Introduction
Nineteen soil samples and one plant fiber sandal from four sites in Death Valley, California, were submitted for archeobotanical analysis. Two of the sites, DEVA 83A-7 and DEVA 83A-10, are shelters, while the remaining two sites, DEVA 83A-8 and DEVA 83A-9, are open sites.

The samples were taken with a soil auger in 10 or 20 cm levels and ranged in volume between 1.3 and 3.0 liters. Five samples were taken from DEVA 83A-7, four from DEVA 83A-8, eight from DEVA 83A-9, and two from DEVA 83A-10. Core locations are shown in Figures 27, 31, 34, and 36. The sandal came from the surface of DEVA 83A-7 (Figs. 27 and 28).

Methods
The 19 soil samples were processed using the procedure established by Bohrer and Adams (1977:37). The light, bouyant fraction that was sieved out during immersion in water was sorted by means of a stereozoom microscope with a maximum magnification of 30 diameters.

After the first few samples had been examined, it was readily apparent that approximately 85 to 95 percent of the samples consisted of uncarbonized, essentially modern plant materials. Carbonized items consisted primarily of chunks of wood charcoal. As a result, the scope of work was considerably reduced; 10 samples were sorted, with the selection biased in favor of those samples from the deepest levels in hopes that better context and preservation might be obtained. All of those samples from DEVA 83A-7 that were not sorted were inspected without magnification in order to find any additional textile fragments that might be present.

The two different fiber components of the sandal were examined microscopically and compared with known specimens in the author's collection. A small piece of the braided weft element was macerated in
a 10 percent potassium hydroxide solution to free the individual fibers for examination and comparison.

Results

The abbreviated scope of work resulted in the sorting of the following 10 samples:

- DEVA 83A-8, Feature 1, 0-10 cm
- DEVA 83A-8, Feature 1, 30-40 cm
- DEVA 83A-9, Feature 1, 0-10 cm
- DEVA 83A-9, Feature 1, 10-20 cm
- DEVA 83A-9, Feature 2, 0-10 cm
- DEVA 83A-9, Feature 2, 10-20 cm
- DEVA 83A-9, Sample 4, 0-20 cm
- DEVA 83A-9, Sample 5, 10-20 cm
- DEVA 83A-10, Sample 1, 0-30 cm
- DEVA 83A-10, Sample 2, 0-30 cm

Core sample 5 from DEVA 83A-7 was sampled; approximately 1/3 was examined.

Most of the samples contained an impressive quantity of modern, plant litter that proved consistent in composition from sample to sample. The most abundant constituents were juniper (Juniperus osteosperma) berries, seeds, branchlets, leaves and male cones; single-leaf pinyon (Pinus monophylla) needles, cone scales, seeds, and bark plates; big sagebrush (Artemisia tridentata) leaves and achenes; Chenopodium seeds; phyllaries and achenes from various species in the Compositae; rootlets; seeds from species of the Boraginaceae and Nyctaginaceae; resin droplets; insect exoskeleton parts and pupa cases; small lizard-sized bones and fecal pellets.

Wood charcoal was present in all of the samples, ranging from pebble-sized down to finely comminuted fragments. Many of the larger identifiable pieces were rounded and smooth as though they had been tumbled; this is probably a result of the charcoal having been blown around on or wind-blasted by abrasive sand and rocks. A random sample of 5 to 10 pieces from each sample with large enough fragments for identification indicated that the woods were almost all Pinus sp. (probably single-leaf pinyon) with a little juniper with one small fragment of an unidentified hardwood.

Nine nonwood carbonized items were found in the samples. They consisted of four single-leaf pinyon needles and three seeds from DEVA
83A-8, one small dicotyledonous stem fragment from DEVA 83A-9, and a single composite achene, also from DEVA 83A-9. The three small seeds from DEVA 83A-8 are from a 30 to 40 cm deep core sample from within Feature 1. All are broken or fragmentary, and all three have been distorted from the heat, causing surface buckling and exfoliation. Two of the seeds are roughly the same size and shape; they are irregularly ovate with what was probably a biconvex cross section. The most complete specimen measures 1.1 mm in length, 1.05 mm in width and 0.5 mm in thickness. This particular seed may be a Chenopodium. The last seed is represented by an upper 1/3 to 1/2. It is somewhat larger, measuring 1.6 mm in length and 0.8 mm in thickness. It also have a biconvex cross section. All three of the seed sizes are within the range for Chenopodium species, and modern seeds of the genus were found in several of the flotation samples; however, the absence of diagnostic characteristics makes identification impossible.

It is extremely difficult to consider these few carbonized items as by-products of cultural activity; they could just as easily have been carbonized by naturally occurring local fires. The loose, unconsolidated fill at all of the sites has undoubtedly been subject to considerable bioturbation since abandonment, a contention that is substantiated by the large numbers of rodent fecal pellets and ant body fragments contained in the flotation samples. Any of these or other burrowing animals could have easily introduced naturally carbonized, more recent materials into lower site fill levels.

With regard to the uncarbonized materials, the recovery of a sandal from DEVA 83A-7 has demonstrated that unburned prehistoric plant materials can survive. However, despite the presence of such known human food items as pinyon nuts, sagebrush seeds, juniper berries and Chenopodium seeds, there are no simple, reliable means by which they may be aged, nor can distinctions be made between those seeds gathered by animals and humans. For the plant taxa just mentioned, as well as many others, there is considerable dietary overlap and competition; in fact, a favorite trick of many aboriginal groups for acquiring a quick supply of food was to rob animal seed caches. For the purposes of this analysis, then, the absence of carbonization and obvious man-made modifications of the majority of the plant materials recovered prompts
the conclusion that they are probably of noncultural origin, and that no additional insights into Panamint Shoshone subsistence can be obtained.

The fiber sandal found at DEVA 83-A is an incomplete specimen that was probably discarded by the owner when the heel portion gave way (Fig. 52). The length (19.3 cm) and width (8.4 cm) of the remaining section indicate that the sandal was worn by an adult.

The sandal is composed of two basic parts. The first is the warp or foundation, which appears to have consisted of a loop of 2-ply cord that was pulled into an oblong shape. Each single ply has a Z-twist, with the larger of the two measuring 7.2 mm in diameter. The two strands have been S-twisted together, forming a combined diameter of 11.2 mm. These strands are made of shredded juniper bark that is reddish-brown in color.

The second part of the sandal is the weft, which forms the sole. It is composed of a 3-ply braided strand that runs the width of the sandal, alternately looping over and under the two warps (Fig. 52). The overall effect in looking at the sandal from the heel end is that of a laterally oriented "figure 8." The braid is made of yucca leaves that are probably from the locally common Joshua Tree (Yucca brevifolia). The strands are made of single leaves of short length that have been staggered so that a new leaf may be integrated by simply overlapping it on the end of the preceding one, enabling the braiding to continue indefinitely. The leaves are essentially intact; no maceration or pounding has been done to free the fibers from the epidermis and parenchyma. No knots were visible.

The braided sole does not cover the entire sandal. A portion of the toe area has been left open (Fig. 52). The exposed warp has been given a protective reinforcement consisting of a continuous wrapping of finely shredded juniper bark. The wrap was finished by inserting the last loose ends through a few previous loops which were then tightened. The diameter of the reinforced warp is 21.0 mm.

A short length of 2-ply juniper bark cordage was found associated with the sandal. Although it was not found in place, it is probably a tie for one or more toes. The piece is 14.0 cm in length with a total diameter of 11.0 mm. Each ply has a Z-twist, while the two have been
Figure 52. Sandal fragment from DEVA 83A-7.
joined with an S-twist. Both ends are frayed and broken, and no evidence of knots is present.

This sandal joins a handful of other specimens as one of the few examples of fiber sandal manufacture known from the Panamint Shoshone area. Three, possibly four, sandals and sandal fragments were recovered from Coville Rockshelter (Meighan 1953:38-42) located in the Panamint Mountains. Primarily made of Joshua Tree leaves and juniper bark, they exhibit a variety of manufacturing techniques. One, however, is very similar to the DEVA 83A-7 sandal. A small sandal, No. 1-13011F, consists of a 2-ply loop warp that supports a sole made of Joshua Tree fiber bundles that pass over and under the two warps in the same manner described above. The front portion of the sandal has been left open as well. A worn-out heel also caused its discard (Meighan 1953:39-40). Kroeber (1925:Plate 62) illustrates a similar yucca fiber sandal of Cahuilla origin in which the entire sole area is covered. One additional fragmentary specimen was found in the Ubehebe Craters Rockshelter in the northwest corner of Death Valley National Monument (Wallace 1979:91-92). However, this sandal's construction is quite different, consisting of multiple flat warps twined together with closely placed sagebrush wefts.

In an interesting discussion of sandal types and their distributions, Meighan (1953:38-9) notes that fiber sandals are not reported ethnographically for the Panamint area, informants claiming that skin moccasins have been the preferred form of footgear. Meighan suggests that the recovery of archeological sandals from areas in which they were not historically made could indicate a relatively recent replacement of sandals by moccasins in this portion of the Great Basin. The discovery of the DEVA 83A-7 sandal, with its distinctive manufacturing technique, adds a modest bit of supportive evidence to Meighan's hypothesis.

One very small length (25 mm) of possible cordage was found in one of the samples from DEVA 83A-7. It is a segment of loosely Z-twisted juniper bark shreds, 2 mm in diameter. No additional information can be obtained from the specimen.
Summary and Conclusions

Ten soil samples were processed using the flotation method, with the resultant plant remains examined for evidence of cultural use. The samples proved to be composed of modern plant litter probably deposited in the sites by natural means. A sandal recovered from DEVA 83A-7 was the most significant item of plant origin recovered. It makes a valuable contribution to the small body of data available on prehistoric sandal manufacture by the Panamint Shoshone inhabitants of the Death Valley region.
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